

Report of the ERIC Sponsored Research Project

**A CASE STUDY ON SCHOOL-INDUSTRY-LINKAGES IN
VOCATIONAL INSTITUTIONS
OF MAHARASHTRA**

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FOREWORD

An ERIC (NCERT) sponsored research project entitled “A Case Study on School-Industry Linkages (SIL) in Vocational Institutions of Maharashtra” was undertaken at PSSCIVE by Dr. Asfa M. Yasin, Reader, Division of Agriculture, PSSCIVE. The main objective of the project was to study the strategies and modalities adopted by vocational institutions in Maharashtra in establishing School-Industry-Linkage. The state of Maharashtra is one of the states which has been running Vocational Education Programme successfully. This view is strengthened after the present case study. The principal investigator and her research team collected the data from different key functionaries of the Directorate, district vocational offices and school.

An objective analysis of data reveals that the linkages established with industries by the vocational schools have yielded good results in form of 47 percent placement of vocational pass outs in gainful employment.

It is expected that the findings of the study would motivate other State Government/Union Territories administrators to plan for effective School-Industry-Linkages which would go a long way in achieving objectives of VEP.

Dr. Asfa M. Yasin, Principal Investigator deserves appreciation for successful completion of the project and presentation of the report in the present form.

Bhopal
May 2002

Prof. S.Z. Haider
Joint Director
PSS Central Institute of Vocational Education

PREFACE

The Vocational Education Programme has been conceived as a collaborative model, which is a cost-effective approach for development of vocational skills to perform particular job/vocation. Since vocational education essentially involves skill training, and it is rather difficult to make available all latest equipment related to different areas in the school it becomes imperative that school establishes linkage with industries relevant to the vocational courses. This would facilitate availability of equipment and skill trainers to vocational students. The SIL provides work experience in real work situation, thus, prepares individuals to enter world of work after completing the course.

Keeping in view the importance of establishment of School-Industry-Linkage (SIL) for effective implementation of VEP, the present ERIC (NCERT) sponsored research project “**A Case Study on School-Industry-Linkages (SIL) in Vocational Institutions of Maharashtra**” was undertaken to study the strategies and modalities adopted by the institutions in State of Maharashtra for establishing SIL. In Maharashtra several institutions have set up collaborative arrangements with industries. For the present study data were collected from different institutions of Maharashtra running different types of vocational courses. Information thus obtained can be used by other implementing states/UTs to setup school-industry-linkages.

It is noted that observations and conclusions of the present study will be useful to the other states/UTs as also to the policy makers, principals and teachers for effective setting up of school-industry-linkages for better implementation of the VEP.

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Bhopal
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Asfa M. Yasin
Principal Investigator

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ABBREVIATIONS

VEP	Vocational Education Programme
SIL	School-Industry-Linkage
DVE&T	Directorate of Vocational Education & Training
DVEO	District Vocational Education Office
CI	Collaborating Industries
SAC	School Advisory Committee
IAC	Institute Advisory Committee
SLC	School-Industry-Linkage Committee

Vocational Courses

AET	Auto Engineering Technology
BM	Building Maintenance
CS	Crop Science
ET	Electronics Technology
FM	Farm Mechanic
Hort.	Horticulture
IHK	Institutional House Keeping
MS	Marketing and Salesmanship
MREDA	Maintenance and Repair of Electrical Domestic Appliances
MT	Mechanical Technology
MLT	Medical Laboratory Technician
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Executive Summary

EXECUTIVE SUMMARY

The recommendations of Kothari Commission (1964-1966) for creating separate stream of vocational education at +2 stage, was essentially in view of making students employable. Therefore, emphasis is to be given on the skill development part of curriculum to carve in the competencies in students required to enter in to the world of work. It is at this juncture, cooperation and collaboration of industries is solicited for practical training during and after the course. The vocational component of the course requires large infrastructure, costly equipment and more importantly the actual work place and environment. Due to this VEP is conceptually considered as a collaborative model. This led to the concept of establishing school-industry linkage, which is essentially required for enabling transaction of the practical part of the curriculum during the regular teaching programme.

In the back drop of above theme, rationale of the present study was to assess the status and to know the modalities being followed for establishing SIL in Maharashtra, where the VEP is being successfully running in more than one thousand institutions. The SIL has been established by nearly all the institutions for all the courses. This case study was taken up to know the working modalities and strategies for establishing SIL and to assess the status of the same in these institutions. The objectives of the study were to study the nature and extent of linkages, effect of SIL on the performance of students, to evaluate the strengths and weaknesses of SIL and to standardize the modalities for establishing SIL.

The research questions framed to yield the required information are given below :

- i) What type of planning framework schedule have been developed for establishing the linkages?
- ii) What are the strategies and modalities for collaboration?
- iii) What is the nature and extent of collaboration?
- iv) What are the specific modalities in terms of use of hardware and software, sharing of library facilities, deployment of experts, student supports, support in teaching learning process, etc. for establishing the linkage?

- v) What percent of the curriculum is covered with the help of collaborating institution?
- vi) What are the major bottlenecks in implementing SIL?
- vii) What are the suggestions for the improvement of SIL?

The universe of the study was comprised of 10 institutions of Maharashtra, essentially running at least one or two vocational courses related to Engineering and Health areas. The list of institutions was provided by DVE&T, Maharashtra. These institutions belonged to five districts of the state namely Nagpur, Nasik, Amravati, Mumbai and Pune.

The respondents as units of observation of different agencies included the following :

Directorate of Vocational Education & Training, Maharashtra

Director (1)

Dy. Director (2)

DVEO (5)

Vocational Schools

Principal (10)

Teacher (62)

Students (487)

Collaborating Agencies/Industries

Owner (25)

Supervisor (5)

The 10 institutions were visited personally to collect data by the research team. Before the filling up of the questionnaires, all the respondents were given deliberations regarding the aim of this study, expectations from them and procedures of filling up of the questionnaires.

CIs of the concerned institutions were also visited to interview the owners/representatives and to obtain information on questionnaire. The data was then compiled and tabulated for further analysis. The data yielded general information about the institutions, status of the vocational courses of last five years, teacher

profile of each institution, adequacy of infrastructural facilities at school/industry viz. hardware, software, library facilities, availability of technical staff, involvement of supervisor, training schedule and distances of CIs from institutions.

Regarding the curriculum transaction of the vocational course, major practical part is covered at CIs. In this reference, teachers have mentioned that collaborative arrangement has reduced the load of teaching, also SIL proved to be one of the efficient teaching-learning methods.

Good performance of students in terms of skill development was evaluated and certified by the CIs, which led to the placement of students in significant percentage.

Also, based on adequacy for these facilities and overall satisfaction of training arrangements, the viable institutions were identified. Institutions obtained above 50 per cent marks in total on above mentioned indicators were designated as viable institutions and below 50 per cent were designated as less viable institutions in the context of school-industry linkage and VEP.

The major findings of the study include :

1. The strengths of the SIL in Maharashtra include active participation of DVE&T, schools, industries and students and as a special mention the constitution of IAC/SAC or monitoring committees in majority of schools. The bottlenecks noticed in the establishment of SIL include no set norms for sharing of expenditure on raw material, any wear and tear and absence of any incentives to industries.
2. Amongst 12 trades being offered in these institutions, the popular ones include ET, MREDA, BM, AET and MLT vocational courses.
3. As per five years records (1994-99) of these institutions show that maximum employment was noticed in BM followed by MREDA, TT, ET and MLT vocational courses and total employment percentage of 47.02 was recorded from the year 1994-1999 in the ten institutions under study.

4. Adequate number of teachers were employed in all the trades. The teachers possessed qualifications including professional degrees such as MBBS for MLT and BE for ET courses.
5. A total of 231 industries were collaborating with these 10 Junior Colleges and majority of them were private. Looking to the strength of students in each trade, the number of CIs seems to be adequate.
6. Most of the CIs usually bear the entire cost of repair and maintenance of equipment although sometimes the cost of wear and tear of the equipment is also shared with students. However, no school had a formal agreement with CIs regarding sharing of expenses on the same.
7. Generally industries allow the use of equipment and machine under their supervisor. A very few industries allow the independent use by students. Sophisticated and sensitive instruments are allowed only for demonstration.
8. The viable institutions as identified in this study had professionally qualified staff, collaboration with a good number of industries, adequacy in infrastructure, books, etc., students performance by having access to industries for time for individual practice in majority of cases.

To conclude, it can be said that the 'three point' strategic approach of SIL was the key to success which include the linkages were compulsorily required to establish for every course, secondly, the owner or representatives of CIs were the members of IAC which motivated them to collaborate willingly. Thirdly, establishment of linkages with a large number industries was proved to be the most beneficial for students for more opportunity and time for individual practice. In general, these strategies proved to be the strength of SIL in the institutions under this study.

Based on the findings, the recommendations/suggestions given below which may help in removing the bottlenecks.

1. Maharashtra State has succeeded in establishing SIL in majority of institutions. The quality of industry participation is also satisfactory. However, SIL could still be strengthened by increased support from the Government (State or Central) by framing policies for mutual inputs and benefits between school and industry.
2. To encourage more participation of industries in SIL, government should make some strategy for giving incentives to the CIs in the form of monetary support or exemption in taxes and recognition as trainer industry or as accrediting agency.
3. In order to ensure successful establishment of SIL, big industrial establishments should also be approached and motivated by the government to join hands for the success of VEP at large.
4. Considerable emphasis should be given for individual practice especially in courses like Medical Laboratory Technician, Electronic Technology and Auto Engineering Technology. Therefore, there should be limited number of students per industry.

Chapter – 1

Introduction

CHAPTER 1

INTRODUCTION

Education has always been considered to be a means of increasing ones employability and all round development (physical, intellectual, social etc.) of individuals. However, it was realized few decades ago that the prevailing system of academic education by and large was not preparing students for any specific employment or job. The Central Advisory Board of Education (CABE) in its 38th meeting held in 1975 reiterated that the +2 stage of education should be regarded not merely as a college preparatory but a period for preparing an incredibly large number of schools leavers for different vocations in life. The need for equipping students especially the school dropouts for the world of work led to the concept of vocationalisation of education. The Vocational Education Programme (VEP) at higher secondary stage was therefore, initiated in 1976 when NCERT presented its document “Higher secondary education and its vocationalisation” to the country.

As emphasized in the NPE (1986), the VEP encompasses certain elements meant to enhance individual employability, to reduce the mismatch between demand and supply of skilled manpower, and to provide an alternative for aimless pursuit of higher education.

The VEP was launched as a distinct stream at par with science, arts and commerce streams available at +2 stage. Under the VEP, several vocational courses in the areas of Agriculture, Engineering & Technology, Business & Commerce, Home Science Health and Paramedical, and Humanities, Science and Education have been implemented in almost all states/UTs of the country. Presently the capacity for enrolling about 10 lakhs students in 6728 Higher Secondary Schools/Institutions of different States/UTs has been created under Centrally Sponsored Scheme. However the vocational courses are actually offered in 5657 institutions with half the enrolment capacity.

National Curriculum design for vocational education at +2 level

The NCERT on the basis of recommendations of the National Review Committee on Higher Secondary Education with Special Reference to

opportunities to them to appreciate the problems involved in school teaching and the need for provision of practical / training facilities by various industries. On the other hand, the collaboration would enable educationists to recognize the requirement of the industry with regard to the type and level of manpower. Working in collaboration would therefore lead to preparation of the vocational students as per the requirement of the industry thereby making them much more acceptable and useful to the world of work.

Industry, in the context of vocational education, may be any agency, individual or institution, which has the means, competencies and potentialities to assist in imparting specific vocational competence to vocational students and providing on-the-job training and helping the vocational products in getting wage and self-employment. Thus the industry may be a factory, an agricultural farm, a hospital, a workshop or a business concern.

Models of Collaboration : For successful collaboration three models have been suggested, which are working well in states of Haryana, Chandigarh and Maharashtra (Palanivel 2001). These are as under :

1. **School Model :** In the school model, both theory and practical part of curriculum is transacted in the school itself. All the necessary facilities viz. workshops/laboratories, equipment, etc. are provided in the school itself. For On-the-Job-Training, schools establish Production-cum-Training centres and 45 days training is given in summer vacations. This model is being practiced in Home Science and Business & Commerce related vocational courses.
2. **Industry Model :** Some vocational courses require involving costly infrastructure and equipment. Besides, work situation cannot be simulated in school, therefore all theory, practical and training part of curriculum is transacted at the industry itself. This model is adopted for health related courses viz. X-Ray Technician and Auxillary, Nursing and Midwifery (ANM). Though this model may also be tried for agriculture/engineering based courses.

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3. **School - Industry Model :** In this model, training is provided partially in an industry. The topics/skills for which specific industrial infrastructure, environment and instructions are required, the training is provided in the industry along with the teaching sessions at the school. This model is operational for Hotel Management, Bakery and Confectionery and Food Service Management Courses.

Establishment of linkage of institution linkage with the industry requires considerable initiative on the part of institution offering the vocational courses. The principal or the teacher has to visit neighboring institutions for assessing the facilities there which may be utilized for day-to-day transaction of the courses. These facilities can be in the form of use of hardware, use of software, library and expertise. The institutions permitting the use of any one of the facilities is called collaborating institutions. There may be one or more such institution(s) for each course. However, selection of such institution is quite difficult. Sometimes the institutions, which are suitable for collaboration, require permission from their superior, which normally takes quite sometime. The PSSCIVE has developed a guideline document to facilitate teachers for establishing the school industry linkage, which has been made available to the implementing states.

Salient Features for Developing Linkages

Since VEP is a collaborative model, linkage of schools with professional agencies/industries becomes essential component of the programme. The purpose of developing linkages should not only be to provide on-the-job training or a few lectures by the expert but should include collaboration and cooperation right from the planning stage to the employment stage. Thus the linkage should be viewed in totality for improvement of training at the school and industry for the implementation of the scheme of vocationalisation of education. The important features of linkages as envisaged by PSSCIVE, NCERT include :

- (a) **Linkage at different levels :** The employers are involved at the time of curriculum development and revision to prepare manpower according to their needs.

- (b) **Adoption of an Institution :** By adopting an institutions industries can take an active part in supplementing the activities of the school to implement practical training. The industries may be requested, influenced and encouraged by the school and the community.
- (c) **Practical Training :** Type and intensity of practical training or on-the-job training in vocational courses vary as per the need of the course. It should generally be provided by the collaborating institutions. Therefore, different modalities have to be evolved in such case, for example practical training in the area of Trade and Commerce in the initial stages should be provided through the simulated conditions in the institution itself. In the various literature developed by the PSSCIVE, NCERT, it is indicated that the schools offering commerce based vocational courses should have a Student Bank, Students Co-operative Society and a Commerce Lab. However, these should be set up with the active collaboration and cooperation of different professional institutions/organisations. For example, a bank has to be set up on the lines of an actual bank with the help of bank people. This bank should have different forms, documents, registers, cheques, etc., which are frequently used in a bank. Similarly, the setting up of a cooperative society should be done by 'active cooperation, guidance and advice of the cooperative department. This will provide an effective linkage without any resistance by the professional bodies. Ultimately this should lead to block period of on-the-job training in the real banking, cooperative, insurance set up. This approach will also remove the fear from the mind of industry/trade that the students will waste the time of these organisations.
- (d) **Evaluation :** A better linkage between the school and industry/community can be set up if employers as examiners are involved in the process of evaluating the students performance. Thus, they can come to know about the quality and level of skills developed through VEP at the +2 stage.
- (e) **Placement :** Properly established school industry linkages certainly help in development of skills in pass-outs. It is hoped that either the product will be employed by the local industry/trade etc, or will be recommended by them for absorption in the organisations located elsewhere.

Strategies and modalities for developing School Industry Linkages

PSSCIVE NCERT, has developed guidelines for establishing SIL for vocational education programme. The strategies and the modalities suggested in the guidelines are given below :

Strategies

Criteria for Selection of Collaborating Institution/Agency

Selection of collaborating agency for vocational education programme at the + 2 stage should be need-based which may vary from institution to institution, and from course to course. Therefore on the basis of the needs assessment, criteria should be developed to select the appropriate agency for collaboration. General, criteria for selection of collaborating agency may include :

- Availability of Infrastructural Facilities for Practical Training and Classroom Teaching :- tools, laboratory/workshop, teaching aids, physical utility services etc.
- Availability of Experts for Teaching : Their qualification and experience.
- Availability of Library Facilities
- Availability of Relevant Teaching Instructional Materials
- Accessibility of Location
- Willingness of the Collaborating Agency

Modalities of linkages between school and collaborating industry / agency

The success of implementation VEP in the institution depends upon effective management of operation based on the accepted norms of modalities of linkages established between the vocational institution and collaborating agency. The modalities should be arrived at for the use of hardware, software, experts, technicians and attendants, library; supply of instructional materials; and for co-ordination of time table. The modalities will vary from agency to agency and course to course.

Modalities for the Use of Hardware (Machine, Equipment) : The hardware should be used under the guidance of workers/supervisors in the collaborating institution. In the case of sophisticated, sensitive and expensive equipment which may not be made freely available to the students, the concerned persons in the collaborating institution may demonstrate their functioning and use.

Modalities for the Use of Software (consumable articles, chemicals, glassware, etc.) : Provision of consumable chemicals, breakable ware etc. required for instructional purposes should be met fully by the vocational institution or partly shared by the collaborating institution.

Modalities for the Deployment of Experts as Teachers : The subject matter of a vocational course may often demand high level of knowledge and practice in specific areas and this may be available only with the collaborating institution. The experts of the collaborating institution would be expected to teach theory and conduct practical for the vocational students.

Modalities for the Use of Instructors, Technicians and Attendants : The instructor or the training officer must be apprised about the curriculum of the vocational course. He/She should also evaluate the performance of pupils during practical and on-the-job training along with subject teacher of the school.

Modalities for the Co-ordination of the Time Table : The heads of the two institutions should prepare such a time-table so that the normal work of the collaborative institution is not disturbed.

Modalities for the use of Library : There should be a scheme of book bank for a school or group of schools so that the students can make use of these books throughout the training.

Modalities for the Supply of Instructional Materials : In case of non availability of instructional materials the expert teachers from the industry may help the teachers in preparing lecture notes, handouts, worksheets, etc. for the students. In case the expert require audio-visual aid necessary arrangements should be made to provide these both by the school as well as collaborating institution. It is expected that the



collaborating institution would make freely available audiovisual equipment and relevant video cassettes, film strips, transparencies etc. present in its stock to the expert teacher for use when required by him / her for teaching vocational students. However, in the absence of audio-visual hardware and softwares in the collaborating institution, the school should provide them.

Monitoring of the School Industry Linkage

Development of a sound mechanism to monitor the working linkages established between the collaborating institution and vocational institution is required to attain success in VEP. Monitoring of linkages is essential for facilitating :

- availability of expected infrastructural facilities;
- judicious utilization of facilities;
- timely availability of physical utility services;
- timely coverage and completion of curriculum;
- availability of instructional materials to students;
- full participation of students in theory and practical classes;
- maintenance of norms and standards;
- alternative arrangements in case of interruptions;
- strengthening of linkages.

To fulfil the above objectives monitoring of linkages is needed at two critical levels:

- (i) Administrative Control Level
- (ii) Lab Workshop Functioning Level

Review of Literature

Vocational Education Programme (VEP) was launched in different states of the country in 1977. Even after 25 years since the recommendations of Kothari Commission on NPE, 1966, this programme has neither achieved the target of diversion of students nor has it expanded as per expectations. Various studies (research and evaluation) have been conducted in order to find out those bottlenecks due to which VEP could not achieve the desired success. Collaborative arrangements

or School-industry-linkage (SIL) in particular is an essential component for success of VEP but no study has been done specifically on the role of SIL in the success of VEP. Though in all the studies this component has been referred. An account of studies and observations of different studies in relation to SIL have been cited below:

1. Raizada and Sacheti (1990) in a quick appraisal of implementation of Centrally Sponsored Scheme (CSS) of vocationalisation of secondary education in the state of Gujarat, mentioned that more than 50 percent institutions had no collaborative arrangements with neighboring institutions and industries for the vocational courses. Rest of the institutions had made some collaborative arrangements with industrial units, hospitals etc. The report did not indicate any provision of on-the-job training in the institutions.
2. Sacheti and Raizada (1990) while undertaking studies on the implementation of VEP in the state of Rajasthan noted that only 30 percent of the institutions reported to have collaboration on a limited scale i.e. for getting part time teachers and/or utilizing the facilities for conducting practical. It was observed that difficulty in establishing collaboration was due to different controlling authorities, conflict of time schedule, distance and lack of additional remuneration.

The case study suggested that this kind of collaborative arrangements shall prove beneficial in two ways, first effective utilization of the facilities man, such as material and machines and secondly facility to students with actual training required for the trade.

3. Another study conducted in Goa by Vaid and Sengupta (1990) noted that schools in the state were partially successful in arranging collaboration with neighboring industries. They stated that collaboration between school and agencies like commercial and industrial establishment, professional institutions, government departments, employers organisations, voluntary organisations and the community at large was very much required for effective transaction of curricula of vocational courses.

4. Sengupta and Dhote (1990) in a quick appraisal of implementation of CSS for VEP in Himachal Pradesh observed that satisfactory planning and arrangement for establishing SIL have not been made. Principals and teachers suggested that funds should be provided for making arrangements for transporting students to industries.
5. An on-the spot study in Maharashtra by Dhote (1991) revealed that almost all institutions in the state have formed advisory and linkage committee involving knowledgeable persons from the industries, community together with local officials from different departments and organisations. He also observed that these committees were functioning well and students were getting benefits. However, in rural areas cooperation from industries was not satisfactory.
6. A study by Guru, Dhote and Ray (1992) in Andhra Pradesh showed that collaborating arrangements were made as per requirement with local polytechnic, agriculture, medical / dental colleges. However, due to lack of monitoring and timely coordination, the collaborating arrangements were not satisfactorily working. They suggested that for effective collaborating arrangements to provide basic skill training in institution and specialized on-the-job training in collaborating institutions, the management at institution, district and state level should coordinate and cooperate with various organisations for constant monitoring and timely remedial action.
7. In 1992, Sacheti, Raizada and Verma in an on-the-spot study in the state of Kerala did not observe any kind of collaborative arrangements except for few schools running health related courses. The team recommended that Directorate of Vocational Education should take appropriate steps to hold SCVE meetings regularly to take up certain issues like collaboration, etc.
8. Raizada, Verma and Ray (1993), examined implementation of VEP in Madhya Pradesh and observed that no arrangements have been made for SIL by principals and teachers. They suggested that there should be some provisions of funds for transportation of students to collaborating industries/ institutions.

9. The state of Tamil Nadu constituted a high level committee on Vocational Education in the year 1993-94 to evaluate the VEP in the state. The Committee has strongly recommended the establishment of linkages in report. To impart effective vocational training, a linkage system must be established between schools and relevant industries, concerns, farms, factories, workshops and other institutions. It is also desirable to pass legislation to provide facilities for practical work and On-the-Job Training in Employer/User Agencies wherever possible.

The report has also recommended for providing position of collaboration to vocational institutions by government & private agencies like hospitals, Hotel Management Institutions or Polytechnic colleges, (as vocational centres), agriculture farms etc in accordance with the vocational courses.

10. A study was conducted by Operational Research Group 1996 on the directives of Government of India on implementation of VEP through out the country. As mentioned in the report, "It was found that the status of SIL was poor across all the zones of the country. Though in the states where the scheme was yet to be launched collaborating institutions have already been pre-identified to facilitate a strong industry linkage in the future". In the report it is mentioned that generally there was an unawareness about SIL among stakeholders. In the context of collaborative arrangements the emerging issues in the report include :
 - i. Low priority being accorded to practical training for students resulting in under trained pass outs performing poorly in the job market.
 - ii. Lack of identification and thereby participation of Collaborating Institutions in providing collaborative support towards practical training and permission of part time teachers.
 - iii. Lack of recognition of many vocational courses (about 40%) by the Apprenticeship Act, due to different nomenclature or non-specific course contents.

11. The study undertaken by CERPA (1999) has specific mention of linkages with other departments/institutions of VE institutions. The team met officials of different departments namely Agriculture, ICAR institutions, ITI's TTTI, IAMR and AICTE to get the view of these organisations for establishing linkage for vocational courses related to Agriculture, Engineering and Technology, and Health & Paramedical areas. The team strongly recommended that these departments should provide linkages for VEP.
12. Palanivel (2001) While collecting success stories of vocational pass outs in the state of Maharashtra strongly supported that the effective collaboration with industries does have direct relationship with success of VEP.

The overall picture of the studies undertaken till date shows that desired success has not been achieved in establishing linkages between schools and industries.

The recommendations of all reports presented here strongly advocate for establishing linkages for facilitating training facilities, curriculum transaction and judicious use of man, machine and money of other concern collaborating institutions (CI) private/public for the promotion of VEP. However not many concrete suggestions for formulating strategies to establish linkages have been given by any of the studies.

Status of VEP in Maharashtra State

The state of Maharashtra lighted the lamp of VEP in the year of 1988-89 under CSS in accordance with NPE 1986. At that time 169 higher secondary schools / junior colleges launched the VEP with 20 vocational courses. The central share of financial input was Rs.962.77 lakh and state share of Rs. 103.59 lakh to a total of Rs.1066.36 lakhs. Later in the year 1989-90 the programme further extended in 319 higher secondary schools. The 20 vocational courses covered different areas such as technology (5), commerce (3), agriculture (2), paramedical (4), fisheries (2) and Hotel Management (4).

Presently, there are 1076 institutions running 31 vocational courses with 67340 enrolment capacity (Annexure-1). The expansion of VEP in the state shows the success of the programme in terms of acceptability by students perhaps due to promising job opportunities of these courses.

The VEP in the state is being run by the Directorate of Vocational Education and Training (DVE&T), which is the key to success of the programme in the state. It has also created the management structure as per CSS provisions as given below.

S. No	Agency	Function	Levels
1	SCVE DVEC IAC	Policy formulation and coordination	State District Institutional
2	DVE&T DVE&TO Vice Principal	Administration and supervision	State District Institutional
3	State Board	Examination and certification	State

In the context of imparting practical training to vocational students, the Government of Maharashtra circulated the minutes of the meeting of Secretaries of Technical Education Department by MHRD, New Delhi for compliance and necessary action. This decision was that institutions should be linked to the related industries such as Hospitals, Agriculture Colleges, Dairy Farms, and business establishment, etc.

Present Study

CHAPTER 2

PRESENT STUDY

The scheme of the vocationalisation of secondary education emphasizes the utilization of existing resources through coordination and collaboration with institutions and establishments available in the community. In other words for effective implementation of VEP, the institutions have to depend on some or the other kind of facility available in the neighbourhood. A significant number of institutions in Maharashtra has established the SIL which has shown positive impact on VEP. However, the experience is not well because of several bottlenecks in the collaboration. Some of these are as follows :

- Location of collaborating institution
- Lack of transport facility
- Lack of willingness on the part of industry for collaboration.
- Fear of misuse of the facility
- Absence of any incentive to the collaborator

In view of above it has become necessary to standardize the modalities of establishing SIL in the implementation of VEP in the schools. The Maharashtra state has been selected for the study because a large number of institutions have established linkages with concerned industries. It is proposed to have an in-depth case study of a few successful and not so successful institutions.

Rationale of the study

School-industry linkage forms an important component of VEP for the development of required skills. In Maharashtra, collaborative arrangements have been made by a large number of institutions. Studies on various aspects of SIL will help in identifying modalities to form a model for adoption by other VEP implementing status/UTs.

Objectives of the study

- i) To study the nature and extent of linkages formed by the institutions of Maharashtra.
- ii) To study the effect of SIL on the performance of students especially in relation to skill development.
- iii) To evaluate the strengths and weaknesses of SIL established in selected institutions of the Maharashtra state.
- iv) To study way and means to overcome the implementation bottlenecks in the establishment of SIL.
- v) To standardise the modalities for establishment of SIL.

Research Questions

- i) What type of planning framework schedule have been developed for establishing the linkages?
- ii) What are the strategies and modalities for collaboration?
- iii) What is the nature and extent of collaboration?
- iv) What are the specific modalities in terms of use of hardware and software, sharing of library facilities, deployment of experts, academic and student support, support in teaching learning process, etc for establishing the linkage?
- v) What percent of the curriculum is covered with the help of collaborating institution?
- vi) What are the major bottlenecks in implementing SIL?
- vii) What are the suggestions for the improvement of SIL?

Methodology

CHAPTER 3

METHODOLOGY

A. Sample

The Directorate of Vocational Education & Training (DVE&T) of Maharashtra was requested to provide information on institutions offering at least 1 or 2/all vocational courses from the areas of Engineering and Technology, Health and Agriculture, as these areas compulsorily require to establish linkages with industries /hospitals/agriculture farms etc. The selection of institutions was made from 5 different districts in view of diversity in the functioning and level of industries which may affect establishment of SIL in VEP.

Units of Observations as respondents of concerned organizations include:

Directorate of Vocational Education & Training, Maharashtra

Director (1)

Dy. Director (2)

DVEO (5)

Vocational Schools

Principal (10)

Teacher (62)

Students (487)

Collaborating Agencies/Industries

Owner (25)

Supervisor (5)

B. Tools

An expert group meeting was organized for developing tools for the project. Copy of these are given in Annexure-1. The objectives of obtaining information from the 7 questionnaires is given below:

1. General information about school – background and status of VEP in the school.

2. Information about enrolment and pass outs in different vocational courses running in the school since last five years.

To obtain information about the enrolment and employment opportunity of vocational course amongst students as per their pass out percent and their placement in wage/self employment.

3. Teacher Profile

To assess whether or not the qualifications of the teachers are as per requirement of the vocational courses.

4. School-Industry Linkage

To assess the adequacy of infrastructure, instructional material, practical training time and distance of collaborating industries covered by the students.

To know the modalities/arrangement of SIL in the school.

5. Collaborating Institutions (CI)

Inclination and extent of involvement of CIs for establishing linkages with schools.

6. Advantages and constraints in School-Industry Linkage.

To know the views of different respondents (Principal, Teachers, CIs) regarding SIL in terms of its importance and bottlenecks.

7. Role of different agencies in School-Industry Linkage programme

To know the perception of respondents with regard to role and responsibilities of different key functionaries for effective SIL including themselves.

D. Procedure

The State Directorate of Vocational Education & Training of Maharashtra was informed about the selection of 10 institutions for the case study and after taking necessary permission, institutions were visited. The institutions were given direction

from the Directorate to cooperate and provide all support and information to the Principal Investigator to obtain data for the project. Questionnaires were administered to respondents. First the deliberations were made with regard to the background and objective of the study. In different session Principals, teachers and students were also interviewed personally in team. Teachers were requested to help for getting filled the questionnaires from students. Agencies/institutions collaborating with schools in different vocational courses were also visited for obtaining information through questionnaires and interviews. The visits were made during the time when students were engaged in the training.

E. Analysis of Data

Data collected from 10 schools was then complied and tabulated institution-wise and course-wise for further analysis. Quantitative and qualitative analyses of the data were done. Findings are presented graphically. For identification of viable and less viable institution in terms of SIL, assessment of institution was done on the basis of various components. (Table-12)

Profile of the Institutions

CHAPTER – 4

PROFILE OF THE INSTITUTIONS

Ten institutions covered under the case study belongs to 5 districts of Maharashtra Viz. Nagpur, Nasik, Amravati, Pune and Mumbai. Background of districts and institutions is highlighted here in terms of historical background, number of student, vocational courses running, etc (Table 1).

Institutions of Nagpur

Nagpur city is the second capital of the state. Previously it was capital of Madhya Pradesh. It is centrally placed industrial city and has been educational centre since British times. The city is well connected by Indian Railways, Air link to reach all corners of the country. Dinanath Jr. College and Government Technical High School Jr. College have been selected for the present case study.

Dinanath Junior College : This is a private institution which was established in the year 1918. The VEP was started in this college in the year 1989. Presently 5 vocational courses are running in this college. These are Electronics Technology (ET), Maintenance and Repair of Domestic Electrical Appliances (MREDA), Marketing and Salesmanship (MIS) and Institutional House Keeping.

Government Technical High School and Junior College : This technical school was established in the year 1918. This is co-educational college run by Govt. of Maharashtra. The VEP was launched in the year 1989 and vocational courses currently running in the school are Electronics Technology (ET), Mechanical Technology (MT), and Maintenance and Repairs of Electrical Domestic Appliances (MREDA).

Institutions of Nasik

Nasik is situated at Bombay-Agra route on National Highway and under Central Railway zone - Bombay-Delhi route. It is a religious place where one Jyotirlinga out of 12 in the country is located. Also river Godvari originated from Nasik. This is an Industrial City and has good educational institutions also. Three

Junior colleges i.e. HPT, RYK College, RNC Arts, DB Commerce and NSC Science Jr. College of GE Society and Govt. Technical High School have been taken up in this study. The Gokhale Education Society was founded in 1918, the Head office is at Mumbai. The society has established institution in four zones of Maharashtra which include 85 Pre-primary, Secondary and Higher Secondary Schools, Junior/Senior Colleges, Post Graduate Centres and Research Centres. These are affiliated to State Boards and Universities of Maharashtra.

RNC Arts, JDB Commerce and NSC Science College : The college is also run by GE Society and was established in the year 1963 and the vocational courses were introduced in 1989. This is also a co-education college situated in urban area. Presently ET, MREDA and MLT vocational courses are running.

HPT & RYK Science College : The college was established in the year 1924. The vocational courses were introduced in the year 1989. This college is currently running four vocational courses i.e. ET, MREDA, MLT and Travel and Tourism.

Government Technical High School : This college was establish in the year 1918 and introduced vocational courses in 1989 with the launch of CSS. This is co-educational college and located in urban area. This college is running ET, MREDA and AETT vocational courses.

Institutions of Amravati

Amravati is centrally located district of Maharashtra and has been a good educational centre in the state since British times. The district is connected to other states through Badnera Railway station of Central Railways. Amravati has scope for industrial and business related avenues.

Three colleges, Shri Ganeshdas Rathi Junior College, Vidya Bharati Vocational Junior College and Shivaji Multipurpose Higher Secondary School have been chosen for this study.

Shri Ganeshdas Rathi Junior College : This college was established in the year 1955 which is government aided co-education college run by a cooperative society and located in urban area. This institution was established in year 1972 and vocational courses were introduced in the year 1988. Currently, the college is running 3 vocational courses viz. Electronics Technology (ET), Building Maintenance (BM) and Medical Lab Technician (MLT). The total enrolment in vocational stream is 32.

Vidya Bharati Mahavidyalaya : This college was established in the year 1972. This is co-educational college, located in urban area and government aided private college. The vocational courses were introduced in the year 1988. There are 20 students in three trades running in the college, which are Auto Engineering Technology (AETT), Electronics Technology (ET) and Marketing and Salesmanship (MS).

Shivaji Multipurpose Higher Secondary School and Junior College : This school was established in the year 1925 and introduced vocational courses in the year 1978. This is a co-education, private but government aided school located in urban area. This school is running only agriculture related vocational courses which include Farm Mechanics (FM), Horticulture (H) and Crop Science (CS). The total enrolment of students in these courses is 150.

Institution of Mumbai

Mumbai is among one of the four metropolitan cities of India having variety of establishments such as industrial, educational and most important is cinema industry. Accordingly, the scenario of entrepreneurship and employment opportunities is also quite diversified. This metropolis is directly connected by rail and air with every part of the country.

Patuck Technical High School and Junior College has been chosen for the present study. This college was established in the year 1932. This is a private co-educational college and government aided located in urban area. The vocational courses were introduced in the year 1988. Presently the vocational courses running in the college are : Building Maintenance (BM), Electronics Technology (ET),

Medical Laboratory Technician (MLT), Mechanical Technology (MT), Auto Engineering Technology (AETT) and Maintenance and Repair of Electrical Domestic Appliances. The total enrolment of students in these courses is 218.

Institution of Pune

The city is historically important as it was the capital of Peshwas. Besides being an industrial city, it is also one of the biggest educational centres of Maharashtra. All types of educational and professional institutions have been established in Pune. Mhalsakant College, Akurdi has been chosen for this study.

Shri Mhalsakant Junior College was established in the year 1971. This is located in urban area. It is co-education, private college aided by the government. The vocational courses introduced in the year 1990 were Auto Engineering Technology (AETT), Maintenance and Repair of Electric Domestic Appliances (MREDA) and Building Maintenance (BM) which are still continuing. Presently, 145 students are on rolls of vocational courses.

Table 1 : Tradewise and institutionwise enrolment of students in the year 1999-2000

S.No	Vocational Courses	Name of the Institutions											Total
		Dinanath Jr College & High School Nagpur	Govt Tech H S Cum Ind School Nagpur	RNC Arts, JDB Comm & NSC Sc. College Nasik	Govt. Tech H S & Jr College Nasik	HPT Arts & RYK, Sc College Nasik	Vidhya Bharti Vocational Jr College Amravati	Ganesh Das Rathji Jr College Amravati	Shivaji MPHS Jr College Amravati	Patuck Tech H S & Jr College Mumbai	Mhalsakant Jr College Pune		
1	ET	M	16	16	21	15	6	3		5		97	
		F	3	1	2	5	4			1		16	
		T	19	17	23	20	10	3	0	6	0	113	
2	MREDA	M	4	20	20	13				5	18	84	
		F		3	2	3						8	
		T	4	23	22	16	4	0	0	5	18	92	
3	IH	M	8									8	
		F	3									3	
		T	11	0	0	0	0	0	0	0	0	11	
4	MS	M	6									6	
		F	5									5	
		T	11	0	0	0	0	0	0	0	0	11	
5	MLT	M			5			4		2		19	
		F			6	14		14		2		36	
		T	0	0	11	22	0	18	0	4	0	55	
6	BM	M						11		5	20	36	
		F										0	
		T	0	0	0	0	0	11	0	5	20	36	
7	TT	M										5	
		F										2	
		T	0	0	0	0	7	0	0	0	0	7	
8	AET	M				12	10			5	20	47	
		F										0	
		T	0	0	0	12	0	10	0	5	20	47	

Contd

S No	Vocational Courses		Name of the Institutions										Total
			Dinanath Jr College & High School Nagpur	Govt Tech H S Cum Ind School Nagpur	RNC Arts, JDB Comm & NSC Sc College Nasik	Govt. Tech H S & Jr College Nasik	HPT Arts & RYK,Sc College Nasik	Vidhya Bharti Vocational Jr College Amravati	Ganesh Das Rathji Jr College Amravati	Shivaji MPHS Jr College Amravati	Patuck Tech H.S & Jr College Mumbai	Mhalsakant Jr College Pune	
9	CS	M F T								28 6 34			28 6 34
10	MT	M F T		18							4 1		22 1
				18						0	5		23
11	FM	M F T								14 8			14 8
										22	0		22
12	HORT	M F T								15 21			15 21
										36	0		36
	Total	M F T	34 11 45	54 4 58	46 10 56	40 8 48	32 16 48	16 4 20	18 14 32	57 35 92	26 4 30	58 0 58	381 106 487

Observations
&
Interpretations

CHAPTER 5

OBSERVATIONS AND INTERPRETATION

Types of Institutions and selection of courses

The information compiled of all the 10 institutions undertaken for this case study indicates that these are all co-education colleges out of which 70 per cent 20 per cent and 10 per cent schools are private, government, and of cooperatives respectively.

The information with regard to the selection of vocational courses in these institutions indicates that in 50 per cent schools selection of vocational courses was done on the basis of vocational survey, in 30 per cent schools, the managing committee of the school selected the courses and in 20 per cent schools the vocational courses were introduced on the directives of Directorate of Vocational Education and Training. All institutions mentioned that the current vocational courses should continue in view of their continuous demand. There are 12 vocational courses are being offered in these institutions as given in the table 1.

The above information reveals that private institutions seem to have greater participation in running VEP in Maharashtra and majority of private schools have followed the strategy of selection of vocational courses on the basis of vocational survey as suggested in CSS.

Institutions wise and trade wise enrolment since last five years

In order to find out the inclination of the students for vocational courses and employment scenario (wage and self) the information available in this context was assessed on the basis of five years record (1994-99) of enrolment and employment scenario, except Government High School, Nasik, which has provided only two years data of placement.

The total enrolment of students in class XI and XII was 3186 and 2872 respectively in the years 1994-99 in all the 10 institutions. The decrease by 9 per cent

in the enrolment from Class XI to Class XII was noticed. Further, dropout of 9.5 per cent was noticed at the time of final examination. (Fig.-1 and Table 2)

The employment scenario of these pass outs presented in Table-3 shows that 47.02 per cent students could seek wage (28.76%)/self employment (20.26%). From the Table-2, it is seen that the VEP is found to be successful in providing employment to 46.42% students of ten institutions. This success indicates that vocational courses at +2 stage provide more employment opportunities than the academic courses. The trade-wise enrolment of students as indicated in table 1 gives an idea of their inclination in various trades in descending order is ET, MREDA, MLT, AETT, BM, MT, Hort., FM & CS, MSM, TT.

The employment rate as seen in the Table-3 indicates that the highest placement was in the BM vocational course, followed by BM, MREDA, TT, MLT, ET, AETT, MT, IH, TT & MSM and Agriculture related courses. The above information reveals that students' preferences as seen from the enrolment in decreasing order are ET, MREDA, MLT, AETT, followed by rest of the courses having less than 50 students in different courses. On contrary to this the employment trend of vocational courses as mentioned above is not in accordance with the enrolment. Perhaps this is due to the fact that job opportunities are limited and may be less students get more time at CIs for training which helped in skill development and getting employment easily.

Teacher's Profile

Institution wise and course-wise information regarding the qualifications, achievements, training and publication etc. of teachers was obtained. General observations on teachers' profile of different institutions are given below (Table-4) :

In **Dinanath Junior College and High School, Nagpur**, all teachers have essential qualifications. Regarding past experience, 77.77 per cent teachers had one year experience, the remaining 22.23 per cent had 3 to 6 years experience. Considering present experience, 66.66 per cent are working for last 1-4 years, whereas 33.34 per cent are working since last 10-12 years. None of these teachers is

Table 2 : Institutionwise enrolment, pass outs and employment scenario from the year 1994-1999

S No	School / College	XI	XII	Appeared in Exam	Pass		Wage Employment		Self Employment		Total Employment	
					No	%	No	%	No	%	No	%
1	Dinanath Jr College & High School, Nagpur	251	187	187	163	87.17	22	13.50	24	14.72	46	28.22
2	Government Technical H S Cum Industrial School, Nagpur	323	292	277	193	69.68	53	27.46	84	43.52	137	70.98
3	RNC Arts, JDB Comm & NSC Science College, Nasik	264	245	239	165	69.04	40	24.24	10	6.06	50	30.30
4	Government Technical High School & Jr College, Nasik	320	283	273	226	82.78	17	7.52	23	10.18	40	17.70
5	HPT Arts & RYK Science College, Nasik	259	236	232	190	81.90	31	16.32	72	37.89	103	54.21
6	Vidhya Bharati Vocational Jr College, Amravati	290	209	199	79	39.70	2	2.53	48	60.76	50	63.29
7	Shri Ganesh Das Rathi Jr. College, Amravati	254	232	181	54	29.83	25	46.30	28	51.85	53	98.15
8	Shri Shivaji Multi Purpose High School & Jr College, Amravati	375	375	373	247	66.22	3	1.21	1	0.40	4	1.62
9	Patuck Technical High School & Jr College, Mumbai	550	521	379	320	84.43	220	68.75	30	9.38	250	78.13
10	Mhalsakant Jr College, Pune	300	292	276	209	75.72	81	38.76	54	25.84	135	64.59
	Total	3186	2872	2616	1846	70.56	494	26.7	374	20.26	868	47.02

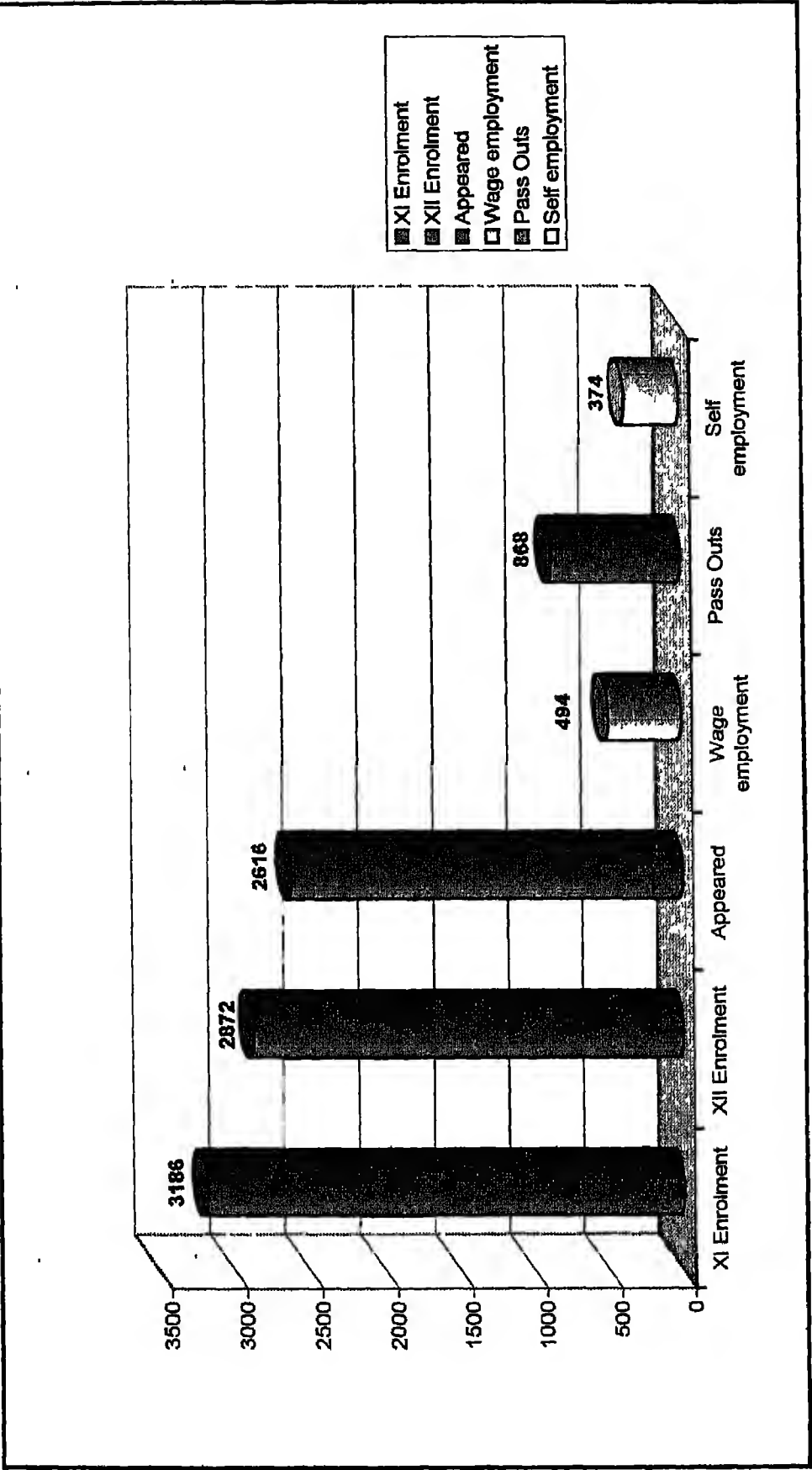


Fig. 1 Enrolment, pass outs and employment scenario of all the ten institutions from the year 1994-1999

Table 3 : Tradewise employment of vocational pass outs from the year 1994-1999

S No	Vocational Courses	Pass Outs No	Employment					
			Wage		Self		Total	
			No	%	No	%	No	%
1	BM	133	85	63.80	39	29.80	124	93.70
2	MREDA	339	111	32.74	89	26.25	200	58.99
3	TT	24	2	8.33	11	45.83	13	54.16
4	MLT	220	77	35.00	40	18.88	117	53.88
5	ET	460	104	22.60	125	27.07	229	49.78
6	AET	224	62	27.63	47	20.98	109	48.66
7	MT	104	37	35.57	6	5.76	43	41.33
8	HORT.	90	2	2.22	1	1.11	3	5.55
9	MS	49	6	12.24	9	18.36	15	30.60
10	IHK	46	7	15.21	7	15.21	14	30.42
11	CS	73	1	1.36	0	0	1	1.36
12	FM	84	0	0	0	0	0	0
	Total	1846	494	28.76	374	20.26	868	47.02

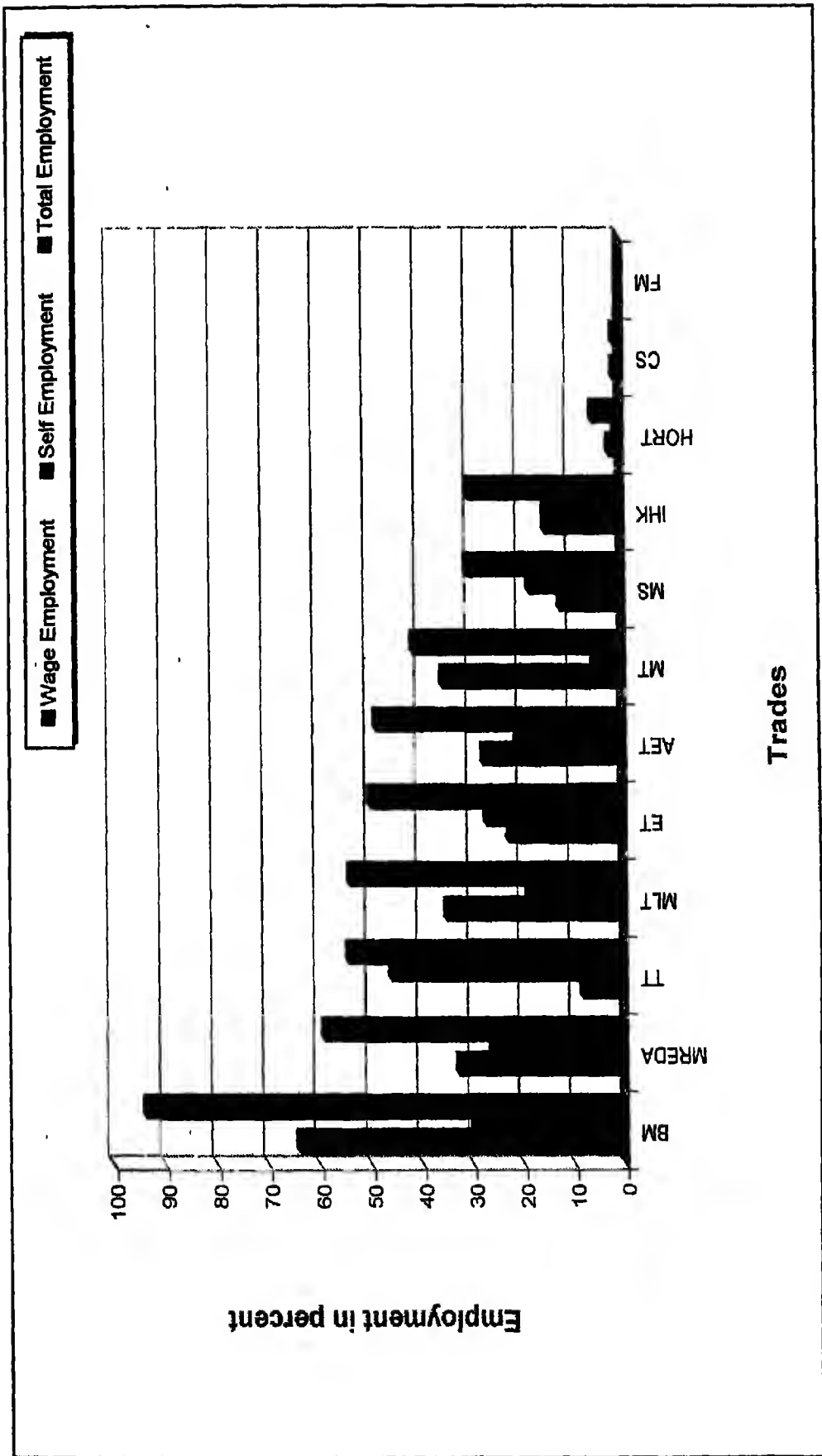


Fig.2 Tradewise employment of vocational pass outs from thr year 1994-1999

found to have any publication or is member of any organisation. All of them gave positive response for their participation in different other duties in relation to VEP.

In Government Technical High School Cum Industrial School, Nagpur, there are six teachers/instructors out of which 5 teachers are diploma holders and one is B.Sc./BTE. As regards their experience it is observed that 50 per cent teachers had 1-3 years and 50 per cent teachers had 15 to 20 years of past experience before joining VEP. The current experience shows that two teachers have worked since 5 years whereas rest 4 are working as vocational teachers since last 10 years. None of the teachers has undergone any training including that of NCERT. All the teachers have positive response with regard to equipping laboratory, assessment of manpower and placement of students besides teaching vocational courses.

The number and qualifications of teachers in **HPT & RYK Science College, Nasik** were found satisfactory. It is observed that only 14.28 per cent teachers had past experience prior to appointment as vocational teacher. Rest 85.72 per cent had no such experience. About 57 per cent teachers are working as vocational teachers for last 7-9 years whereas rest 43 per cent are teaching in the vocational schools for last 10 years. It is observed that 57.64 per cent teachers have attended the short term training organized by NCERT, while 42.36 per cent had no such opportunity. Sixty per cent teachers showed interest in placement of pass-outs and assessment of manpower needs, besides their regular roles in VEP. They also mentioned that they may teach non- vocational subjects if desired so.

RNC Arts, JDB Commerce and NSC Science College, Nasik has engaged 6 teachers/instructors for 3 vocational courses having essential qualifications. It is seen that 50 per cent teachers were having 2-5 years part experience and 12.5 per cent teacher has 15 years experience and rest 37.5 per cent were having one year of past experience. Currently 2 teachers have been working since 2 years and the rest (4) are working as vocational teachers since last 10-12 years.

No teacher has attended any kind of training including short term training of NCERT. Although, every body has shown inclination to plan for establishing / equipping the labs and assess the manpower needs. However, the teachers did not

show any interest to work for placement of vocational students and teaching non-vocational subjects.

In **Government Technical High School and Junior College, Nasik**, there are 6 teachers/instructors engaged in VEP. None of them had past experience. Almost all teachers are working since last 11-15 years. None of the teachers has undergone any teachers training programme including that of NCERT. The teachers have shown positive response for participation in equipping the laboratory, assessment of manpower requirements and placement of students.

In **Vidya Bharti Vocational Junior College, Amravati**, 6 professionally qualified teachers are engaged in VEP. It is observed that only 44.44 per cent were having 3-5 years past experience before joining vocational education. With regard to their current experience, it is revealed that 50 per cent are working only since last one year whereas the rest have been working for last 5-6 years. Besides teaching, all teachers were ready to perform other duties/roles in equipping laboratory, helping vocational passouts in placements (wage/self), assessment of manpower needs and teaching non-vocational subjects, if required so.

Seven well qualified teachers/instructors are engaged in **Shri Ganesh Das Rathi Junior College, Amravati**. Prior to this appointment, 85.71 per cent had one year and the rest had two years experience. After appointment as vocational teacher one is working since three years and rest since five years.

None of the teachers has undergone any training including that of NCERT. In this college five teachers have received awards twice by different agencies and majority of teachers are associate members of other organisations. All the teachers have shown positive response for their participation in equipping laboratories, assessment of manpower and placement of students besides being engaged in teaching.

The vocational school **Shri Shivaji Multi Purpose High School and Junior College, Amravati**, has 5 full time teachers and no instructor. As regards the academic profile of the teachers, it is seen that all of them are P.G., 3 teachers are also having B.Ed. degree. It is also observed that they had 2-4 years experience prior

to appointment as vocational teacher. All of them, except one, are working as vocational teachers since last 22-24 years, only and one teacher is working since last 11 years. Sixty per cent teachers have undergone a training organised by NCERT. Maharashtra Government has awarded one teacher in 1983 for organizing vocational exhibition.

The teachers in this school have mentioned their interest in planning, establishing and equipping the laboratory. They also showed positive response for their involvement in assessment of the manpower needs and placement of students. Though few teachers showed no interest in these activities (20%) and teaching non-vocational subjects (40%).

The Patuck Technical High School and Junior College, Mumbai, has 6 teachers/instructors. The academic qualifications of the teachers is satisfactory and some of them had past experience of 4 years (66.66%) to 13 years (16.67%). In the context of current experience 33.3%, 50% and 16.6% are working as vocational teachers since one year, 5-6 years and 10 years respectively. None of the teachers has undertaken any training including that of NCERT. All the teachers have shown inclination towards roles/duties of VE besides teaching vocational courses such as desire to plan establishing/equipping laboratory, assessing manpower requirement and placement of vocational students. However, they are not interested in teaching non-vocational subjects.

Mhalsakant Junior College, Pune has qualified teachers in all vocational courses. With regard to prior experience, 66.66 per cent teachers had 2-4 years and 33.34 per cent has 7 years experience. With regard to the current experience 66.6 per cent are working since last 7-9 years and the rest 33.34 per cent are teaching since last 10 years.

This college is the only college where 72.41 per cent have attended the short term training of NCERT and one of them had also taken training from outside agency. Fifty per cent teachers are the associate members of some organisations. All the teachers have shown interest for their participation in equipping laboratories, assessment of manpower needs and placement of students. Eighty per cent teachers showed positive response towards teaching non-vocational subjects, if so desired.

Table- 4 : Institutionwise teacher's profile

S No	Name of Institution	Trade	Teacher / Instructor	Male / Female	Qualification	Experience	
						Past	Current
1	Dinanath Jr College & High School Nagpur	ET				1 Yrs-6	1-4 Yrs-5
		AET					
		MSM	T - 5	M - 7	Dip - 2, AMIE - 1,	3 Yrs-1	10-12 Yrs-3
		IH	I - 4	F - 2	PG - 2, Graduate - 2	6 Yrs-1	
2	Ganesh Das Rath Jr College Amravati	ET	Lect - 1	M - 5	BE - 2	1 Yrs-6	3 Yrs-2
		BM	T - 3	F - 1	Dip - 2, Gr - 2		7 Yrs-5
		MLT	I - 2		DB Sc 2, MBBS - 1		
3	HPT Arts & RYK Sc College Nasik	MLT	T - 4	M - 4	M B.B S - 1, B E -1	1-Yrs-7	2-5 Yrs-3
		ET	I - 3	F - 3	Dip - 2, B A - 1		7-8 Yrs-2
		MREDA			M Sc (M A) - 2		10-11Yrs-2
		TT					
4	Mhalsakant Jr College Pune	MREDA	T - 4	M - 5	Dip - 5	1-4 Yrs - 4	
		AT	I - 2	F - 1	B Sc - 1	7 Yrs - 2	7-9 Yrs 4
		BM					10 Yrs - 2
5	Vidhya Bharati Vocational Jr. College Amravati	AT	T - 2	M - 6	CIT / ITI - 1	1-2 Yrs - 5	3-5 3
		ET	I - 4	F - 0	Dip - 4	16-Yrs - 1	7-9 2
					B Sc -1		11 1
6	Patuck Tech H S & Jr College, Mumbai	MLT, ET,	T - 6	M - 4	G - 2, Martic - 2	4 Yrs - 1	1 to 5 3
		MT		F - 2	PG - 2	13 Yrs - 1	6 - 2
		BM			BE/M Tech - 2		10 - 1
		MREDA					
		AET					
7	RNC Arts, JDB Comm & NSC Sc College Nasik	ET	T - 3	M - 5	Dip - 2, P G - 1	4-5 Yrs - 3	2 Yrs - 2
		MLT	I - 3	F - 1	MBBS - 1, TTI - 1	15 Yrs - 1	10-12 Yrs - 4
		MREDA			B Sc - 1	0 Yrs - 2	
8	Govt Tech H S Cum Ind School Nagpur	MREDA	T - 3	M - 4	Dip - 4, SSC - 1	1-3 Yrs - 3	5 Yrs - 1
		MLT	I - 3	F - 2	ITI - 1	15-21 Yrs - 3	10-11Yrs-2
		ET					15 Yrs - 2
9	Shivaji MPHS & Jr College Amravati	CS	T - 4	M - 5	P G. - 5	2-4 Yrs 4	11 Yrs - 1
		FM	I - 1			Above 20 - 4	
		Hort					
10	Govt Tech H S School & Jr College, Nasik	AET	T - 3	M - 4	M Sc - 4, Dip - 4,	2-4 Yrs 4	11 Yrs - 1
		ET	I - 3	F - 2	ITI - 1, BA - 2	Above 20 - 4	
		MRDA					

Above description of teachers profile suggests that the number of teachers in all the institutions are sufficient and majority of teachers have essential academic/professional degree. Teachers of all the institutions seem to have interest in VEP and therefore interested in participation in other related activities. Most of the teachers have not undertaken any teachers training programmes including that of NCERT.

Facilities and training for school-industry-linkage

In order to find out adequacy/inadequacy and non-availability of the infrastructural facilities (Table-5.1 to 5.11, 6, 7 & 8) extended by schools and the collaborating industries/agencies (CIs), responses were obtained by the principals, teachers and students. The infrastructural facilities include workshop/Lab, availability of class room (space), teaching staff, demonstrators and technical staff to assist in the practical training, instructional material, library books, reading time etc. The information is also focussed on the transaction time as well as time available for individual practice. Further during the study, it is also tried to know the timing of training set by the collaborating agencies, whether it is during, before or after school hours or it is at any time suitable to industry (Table 9).

The information has also been obtained about the type (government, aided or private), of collaborating agencies and their distance from the college.

All the above information obtained from the respondents is college wise described below :

In general the views of principals and teachers of **Dinanath Jr. College, Nagpur** (Table 5.1) are similar for adequacy of infrastructural facilities and training arrangement. Twenty five per cent teachers indicated inadequacy for hardware, and 25 per cent teachers indicated inadequacy for instructional material.

Regarding students responses on availability of workshop/laboratory facilities for supply of hardware 73.33 per cent mentioned as adequate, 17.78 per cent said inadequate, whereas 8.89 per cent students have said not available. On supply of

Table 5.1 : Student's views on school-industry-linkage

		Dinanath Jr College & High School, Nagpur						Non Respondent
		Adequate		Inadequate		Not Available		
	Infrastructural facilities	No	%	No	%	No	%	
a	Workshop / Laboratory							
	(i) Hardware	33	73.33%	8	17.78%	4	8.89%	
	(ii) Software	29	64.44%	9	20%	3	15.46%	
b	Transaction time	43	95.55%	2	4.45%			
c	Time of Individual practice	39	86.66%	6	13.34%			
d	Library							
	(i) Books	27	60%	13	28.88%	5	11.12%	
	(ii) Instructional materials	28	62.22%	7	15.55%	8	17.77%	4.46%
e	Class room space	45	62.22%					
f	Teaching staff / Demonstration	45	97.98%	1	2.22%			
g.	Technical staff	31	68.89%	2	4.44%	1	2.21%	25.46%

Table 5.2 : Student's views on school-industry-linkage

		Government Technical H.S. Cum Industrial School, Nagpur					
		Adequate		Inadequate		Not Available	
	Infrastructural facilities	No	%	No	%	No	%
a	Workshop / Laboratory						
	(i) Hardware	58	100%				
	(ii) Software	58	100%				
b	Transaction time	58	100%				
c	Time of Individual practice	58	100%				
d	Library						
	(i) Books	58	100%				
	(ii) Instructional materials	58	100%				
e	Class room space	58	100%				
f	Teaching staff / Demonstration	58	100%				
g	Technical staff	58	100%				

software 64.64 per cent mentioned this to be adequate, 20 per cent showed inadequacy, and the rest 15.46 per cent indicated that it is not available.

In regard to transaction time, a large majority of students (95.55%) mentioned as adequate in comparison to only 4.45 per cent as inadequate. With regard to time for individual practice 86.66 per cent students considered it adequate but 13.34 per cent mentioned it to be inadequate.

On the issue of library facilities for books 60 per cent students mentioned it to be adequate but 28.88 per cent and 11.12 per cent mentioned as inadequate and not available respectively. Sixty two per cent students have registered 'adequacy' on instructional material. On the other hand, 15.55 per cent have mentioned this to be inadequate and 17.77 per cent students as 'not available'. The rest 4.46 per cent remained silent.

According to all students provision of classroom space is adequate and with regard to teaching staff/demonstrators, 97.98 per cent mentioned the adequacy and negligible 2.22% mentioned in adequacy. The availability of technical staff is 68.89 per cent adequate but 4.44 per cent perceived inadequate, and 2.21 per cent as 'not available'. About 24 per cent 'did not respond'.

As regards timing of training in collaborating agencies 24.66 per cent students have mentioned this as being given during school hours, whereas 17.77 per cent students mentioned that it is arranged after school hours. However, 57.77 per cent students have mentioned that they have accommodated according to the time suitable to the industry. Beside this, 45 per cent have mentioned one more arrangements that practical training is arranged during summer vacation.

Thirteen CIs have been identified for practical training by this institution which are located from 2 kms. to 10 kms distance.

The information furnished by the principal, teachers and students of **Govt. Technical High School, Jr. College, Nagpur**, (Table 5.2) indicated that there is adequacy of all facilities viz infrastructure including classroom space, workshop/laboratory, library and instructional material. According to the principal

the training time at CIs is during school hours or according to the time suitable to industry. Teachers have mentioned that besides this sometimes training is also imparted during summer vacations. A total of 31 private industries are collaborating with this institute.

As regards the time of training, students mentioned that training at CIs is available during school hours (10.34%), before school hours (8.62%), any time suitable to the industry (50%) and after school hours (32.4%). Thirty one per cent have also told that training is given in summer vacation. The students of different trades mentioned a total of 31 CIs located at the distance between 2 to 30 kms.

The principal and teachers of **HPT & RYK College, Nasik** (Table 5.3) have mentioned that all the facilities and training arrangement are adequate, except unavailability of teacher for travel and tourism course.

Students have also mentioned adequacy for all the facilities. About 45.83 per cent students mentioned the training during the school hours and the remaining 54.17 per cent students did not respond. There are 26 CIs participating for training in which only 2 are aided whereas rest are private.

The principal and all the teachers of **RNC Arts, JDB Commerce and NSS Science College, Nasik**, (Table 5.4) seem to be fully satisfied with the facilities available for running all the vocational courses namely ET, MLT, MREDA, though students' views differed regarding this.

About the provision of workshop/lab and hardware, 82.14 per cent students expressed as 'adequate' whereas inadequacy was told by 17.86 per cent students. About software, 80.35 per cent students said adequate and 19.65 per cent students mentioned as inadequate.

A large majority of students (94.65%) mentioned transaction time as adequate, only 5.35 per cent found it inadequate. Regarding time for individual practice, 60.71 per cent students showed adequacy and 14.29 per cent students showed inadequacy.

Table 5.3 : Student's views on school-industry-linkage

		HPT Arts & RYK Science College, Nasik					
		Adequate		Inadequate		Not Available	
	Infrastructural facilities	No	%	No	%	No	%
a	Workshop / Laboratory						
	(i) Hardware	48	100%				
	(ii) Software	48	100%				
b	Transaction time	48	100%				
c	Time of Individual practice	48	100%				
d	Library						
	(i) Books	48	100%				
	(ii) Instructional materials	48	100%				
e	Class room space	48	100%				
f	Teaching staff / Demonstration	48	100%				
g	Technical staff	48	100%				

Table 5.4 : Student's views on school-industry-linkage

		RNC Arts, JDB Commerce NSC Science college, Amaravati					
		Adequate		Inadequate		Not Available	
	Infrastructural facilities	No	%	No	%	No	%
a	Workshop / Laboratory						
	(i) Hardware	46	82.14%	10	17.86%		
	(ii) Software	45	80.35%	11	19.65%		
b	Transaction time	53	94.65%	3	5.35%		
c	Time of Individual practice	45	60.71%	11	14.29%		
d	Library						
	(i) Books	34	85.71%	8	14.29%		
	(ii) Instructional materials	48	85.71%	8	14.29%		
e	Class room space	48	85.71%	8	14.29%		
f	Teaching staff / Demonstration	48	85.71%	8	14.29%		
g	Technical staff	44	78.57%	12	21.43%		

Majority of students (85.71%) mentioned adequate library facility, instructional material, classroom space and teaching staff/demonstrator, while 14.29 per cent mentioned inadequacy. For technical staff, adequacy was mentioned by 78 per cent students and 21.43 per cent students mentioned it inadequate.

Regarding the training time during school hours, 65.21 per cent students said it is fixed during school hours. After school hours has been mentioned by 27.27 per cent students and 7.52 per cent said that the training is given anytime suitable to industry. There are 47 private industries collaborating with this college which is maximum number amongst all the ten institutions under study.

This college has established linkages with maximum number of CIs (amongst the 10 institutions) including 11 for MLT course, with hospitals and pathology laboratories, which is quite difficult.

Government Technical High School, Nasik. (Table 5.5) According to the principal the availability of hardware and software facilities and the provision of workshop/ laboratory has been mentioned as adequate. There is no problem in transaction time as well as time for individual practice. Library has been provided in the school and the books / instructional material is available for the students.

The principal mentioned that the timing of the training in the collaborating industry has been fixed during school hours and also at some time suitable to the industry.

The views of teachers are similar to those of principals with regard to facilities and training at CIs except for the provision of software and time for individual practice as 33.33 per cent teachers mentioned inadequacy for this and 16.66 per cent teachers have mentioned inadequacy with regards to time for the individual practice. The teachers have mentioned that eleven industries have been involved as CIs in different courses. According to them the CIs are located between 1½ km to 8 km from the school. As far as availability of facilities and collaboration with industries is concerned the views of teachers and principals indicate that all the students have access to training facilities in all the trades.

All the students have expressed adequacy for all the facilities. Inadequacy in workshop / laboratory, hardware and software provisions was indicated by 66.66 per cent students, whereas 33.34 per cent students remained silent.

The arrangement of practical training at CIs has been mentioned as during the school hours by 21.45 per cent and any time suitable to the industry by 28.57 per cent. Fifty per cent students did not comment. SIL was established with 9 industries.

The principal and teachers of **Vidya Bharti Vocational Institution, Amravati** (Table 5.6) have rated adequate facilities with regard to workshop or laboratory and hardware, transaction time and time for individual practice, provision of library and also for the availability of technical staff.

However, 16.66 per cent teachers have indicated inadequacy on classroom space and availability of instructional material, and 33.33 per cent teachers on inadequacy of technical staff. The principal mentioned that the timings of training in the CIs have been fixed during the school hours but some of the industries are providing training at any time suitable to them. All teachers were found to be satisfied with the training time in terms of arrangement of suitable time by the CI.

All students have mentioned adequacy on availability of transaction time for individual practice and availability of instructional material. But 10 per cent students have shown inadequacy in hardware availability, 20 per cent inadequacy in software. Twenty five per cent students expressed inadequacy on availability of library facilities and books. Only 5 per cent students have expressed inadequacy of classroom, teaching staff and technical staff.

Regarding time of training, 15.62 per cent each have indicated that the training is arranged during school hours and after school hours and a small number (3.25%) said that it is according to the time suitable to the industry and 40.62 percent mentioned that training is arranged in summer vacations. Remaining 24.89 per cent students did not mention anything. Seventeen industries have been identified for linkages. Amongst these one is governed and rest are private.

Table 5.5 : Student's views on school-industry-linkage

		Government Technical High School & Jr. College, Nasik					
		Adequate		Inadequate		Not Available	
	Infrastructural facilities	No	%	No	%	No	%
a	Workshop / Laboratory						
	(i) Hardware	32	66 66%			16	33 34%
	(ii) Software	32	66 66%			16	33 34%
b	Transaction time	48	100%				
c	Time of Individual practice	48	100%				
d	Library						
	(i) Books	48	100%				
	(ii) Instructional materials	48	100%				
e	Class room space	48	100%				
f	Teaching staff / Demonstration	48	100%				
g	Technical staff	48	100%				

Table 5.6 : Student's views on school-industry-linkage

		Vidhya Bharati Vocational Jr. College, Amravati					
		Adequate		Inadequate		Not Available	
	Infrastructural facilities	No	%	No	%	No	%
a	Workshop / Laboratory						
	(i) Hardware	18	90%	2	10%		
	(ii) Software	16	80%	4	20%		
b	Transaction time	20	100%				
c	Time of Individual practice	20	100%				
d	Library						
	(i) Books	15	75%	5	25%		
	(ii) Instructional materials	20	100%				
e	Class room space	20	95%	1	5%		
f	Teaching staff / Demonstration	19	95%	1	5%		
g	Technical staff	19	95%	1	5%		

In this school different opinion has been given by the teachers/principal and students on various items which needs to be clarified.

In **Ganesh Das Rathi Jr. College, Amravati**, (Table 5.7) the principal and teachers have mentioned adequacy on the infrastructural facilities made available at the school/industry. About the timing of training in CIs, he has stated that training is generally given during school hours and some industries are giving training at any time suitable to them.

The students of this college have shown adequacy on availability of workshop/laboratory hardware, transaction time, time for individual practice and provision of library. However, on supply of software, according to 75 per cent students there is adequacy, but 25 per cent students indicated that they are not available. On availability of instructional material 40.62 per cent and 56.25 per cent students mentioned as adequate and inadequate respectively rest 3.13 per cent have indicated that they are not available. A large number of students (96.87%) have shown adequacy on classroom space, provision and availability of teaching staff, demonstrators and technical staff, only 3.13 per cent have shown inadequacy on these issues.

According to 65.62 per cent students the training is available in CIs during the school hours, 25.11 per cent students indicated that the training is given at any time suitable to industry and 9.37 per cent said it is after the school hours..

According to students 19 industries have been registered as collaborating agencies for practical training. The distance between school and CIs is between 2 km to 20 Kms. This college has established maximum number of linkages (12) for MLT course, which is creditable.

In view of the above it is felt that majority of students including principal and teachers were satisfied with the infrastructural facilities and training agencies.

The principal has mentioned adequacy of all the facilities in **Shivaji Jr. College, Amravati**, (Table 5.8) except for the time of individual practice and availability of library facilities and books. He has also mentioned that timing of

training is fixed during school hours in the CIs. Some industries give time according to their own convenience. Out of 17 collaborating industries, 8, 4, 5 are government, aided and private respectively. The distance of industries from school is between ½ to 6 kms.

All the teachers have mentioned adequacy with regard to infrastructural facilities. The views in the context of timing of training at CIs are the same as that of principal. According to 70.66 per cent students of the college there is adequacy on workshop/lab and hardware. About 10 per cent students mentioned it as 'inadequate' and 19.34 per cent have mentioned that these facilities are not available. In software, adequacy has been mentioned by 70.65 per cent students, inadequacy by 6.52 per cent students and non-availability by 22.83 per cent students.

Adequacy of the transaction time was reported by a majority of the students (97.82%) negligible percentage (2.18) of students mentioned this as inadequate. With regard to time for individual practice, 91.34 per cent students showed adequacy, 7.60 per cent said 'inadequate', and 1.06 per cent have mentioned the non-availability. About 95 per cent students expressed adequacy of technical staff, only 5.44 per cent considered it to be 'inadequate'.

On library and books, 90.21 per cent, 8.69 and 1.10 per cent students reported 'adequate', 'inadequate' and 'not available' respectively. Instructional material have been found adequate by 90.21 per cent students but 9.89 per cent students have shown inadequacy.

On class-room space, teaching staff/demonstrators and technical staff, 95.65 per cent students showed adequacy whereas 4.35 per cent students found it to be inadequate.

As regard the timing of training at CIs, 77.17 per cent mentioned this during school hours, whereas students said that training is done after school hours (13.04%) or at the time suitable to industry (9.89%). The distance of CIs from school is between 2-18 Kms.

Table 5.7 : Student's views on school-industry-linkage

		Shri Ganesh Das Rathil Jr. College, Amaravati					
		Adequate		Inadequate		Not Available	
	Infrastructural facilities	No	%	No	%	No.	%
a	Workshop / Laboratory						
	(i) Hardware	32	100%				
	(ii) Software	24	75%			8	25%
b	Transaction time	32	100%				
c	Time of Individual practice	32	100%				
d	Library						
	(i) Books	32	100%				
	(ii) Instructional materials	13	40.62%	18	56.25%	1	3.12%
e	Class room space	31	96.87%	1	3.13%		
f	Teaching staff / Demonstration	31	96.87%	1	3.13%		
g	Technical staff	31	96.87%	1	3.13%		

Table 5.8 : Student's views on school-industry-linkage

		Shri Shilvaji Multi Purpose High School & Jr. College, Amravati					
		Adequate		Inadequate		Not Available	
	Infrastructural facilities	No	%	No	%	No	%
a	Workshop / Laboratory						
	(i) Hardware	65	70.66%	9	9.88%	18	19.34%
	(ii) Software	65	70.65%	6	6.52%	21	22.83%
b	Transaction time	90	97.82%	2	2.18%		
c	Time of Individual practice	84	91.34%	7	7.60%	1	1.06%
d	Library						
	(i) Books	83	90.21%	8	8.69%	1	1.10%
	(ii) Instructional materials	83	90.21%	9	9.79%		
e	Class room space	88	95.65%	4	5.44%		
f	Teaching staff / Demonstration	88	94.56%	4	5.44%		
g	Technical staff	88	94.56%	4	5.44%		

Overall scenario suggests adequacy for all the facilities and arrangements for training including transaction time. For individual practice, a very small percentage of students expressed dissatisfaction..

According to the principal, **Patuck Technical High School & Junior College Mumbai**, (Table 5.9) the infrastructural facilities made available at this college are adequate and the practical training time at industries is after the school hours. All the teachers of this college have also endorsed the similar views on infrastructural facilities. For training time, 50 per cent teachers have mentioned that training time at CIs is after school hours. Teachers have mentioned that 14 industries/agencies are performing the role of collaborating industries. Out of which 8 are located at the distance between 1-5 kms, 4 between 6-8 kms and remaining 2 institutions are more than 15 kms away.

Adequacy on availability of instructional material, teaching staff/demonstrators and technical staff has been shown by all the students. On remaining matters as hardware, 93.34 per cent students have mentioned adequacy whereas 6.66 per cent has indicated that it is inadequate. On software 96.66 per cent adequacy has been expressed. Only 3.34 per cent students have rated it as inadequate.

In comparison to only 10 per cent students, 90 per cent students mentioned adequacy for transaction time. As regards the time for individual practice only 13.34 per cent students mentioned as adequate and 76.66 per cent mentioned this to be inadequate. The remaining 10.10 per cent have indicated that time for individual practice is not available.

About the availability of library/books 26.67 per cent students have mentioned that it is inadequate whereas 73.33 per cent students have mentioned that books are not available. All students showed adequacy for instructional materials.

Regarding facility of classroom space 76.67 per cent students said adequate whereas 23.33 per cent have mentioned that it is not available. Seventy per cent students have mentioned that the timing of training in collaborating institution is during school hours and 30 per cent have indicated that it is held after the school hours.

Students have mentioned that there are 21 collaborating industries located at a distance between 1-30kms.

The principal and the teachers have shown full adequacy on time for individual practice, library books and classroom space, but, according to students this facility was either inadequate or not available. This needs further clarification.

Out of the 10 colleges chosen for the case study only in **Mhalsakant Junior College, Pune**, (Table 5.10) principal, all teachers and students have mentioned adequacy of all the facilities provided including the time for individual practice. The time slot fixed for practical training at CIs is after the school hours.

Students listed 31 CIs which ranged from 1-20 Kms in distance.

Views of all respondents on school-industry-linkages

Principals of the schools have shown adequacy on availability of workshop/laboratory hardware/software, transaction time, supply of instructional materials, technical staff as well as teaching staff / demonstrator. Only 10 per cent principals have shown inadequacy on time for individual practice, laboratory/books and classroom space whereas 90 per cent principals have shown adequacy on these points. Nonavailability has not been reported on any of the facilities (Tables 6,7& 8).

The time of training in collaborating institutions was reported by Principals generally during school hours (60%), 'after the school hours' (30%), and 'before the school hours' by (10%). In addition 90 per cent principals have also said that if the training is not possible at given time, it is arranged at the time suitable to the industries.

A large majority of teachers (96.77%) reported adequacy in the workshop/lab, hardware/software as against only 3.23 per cent teachers who have rated 'inadequate'. All teachers mentioned adequacy for transaction time and availability of library facilities/books. Almost all teachers (98.39%) have said that the time for individual practice is adequate, only 1.61 per cent of teachers differed.

Table 5.9 : Student's views on school-industry-linkage

		Patuck Technical High School & Jr. College, Mumbai					
		Adequate		Inadequate		Not Available	
	Infrastructural facilities	No	%	No	%	No	%
a	Workshop / Laboratory						
	(i) Hardware	28	93.34%	2	6.66%		
	(ii) Software	29	96.66%	1	3.34%		
b	Transaction time	27	90%	3	10%		
c	Time of Individual practice	4	13.34%	23	76.66%	3	10%
d	Library						
	(i) Books			8	26.67%	22	73.33%
	(ii) Instructional materials	30	100%				
e	Class room space	23	76.67%			7	23.33%
f	Teaching staff / Demonstration	30	100%				
g	Technical staff	30	100%				

Table 5.10 : Student's views on school-industry-linkage

		Mhalsakant Jr. College, Pune					
		Adequate		Inadequate		Not Available	
	Infrastructural facilities	No	%	No	%	No	%
a	Workshop / Laboratory						
	(i) Hardware	58	100%				
	(ii) Software	58	100%				
b	Transaction time	58	100%				
c	Time of Individual practice	58	100%				
d	Library						
	(i) Books	58	100%				
	(ii) Instructional materials	58	100%				
e	Class room space	58	100%				
f	Teaching staff / Demonstration	58	100%				
g	Technical staff	58	100%				

Table 5.11 : Institution wise views of students on schedule of training in collaborating industries

Name of Institutions											
S No	Training Schedule	Dinanath Jr College & High School Nagpur	Govt Tech H S Cum Ind School Nagpur	RNC Arts, JDB Comm & NSC Sc College Nasik	Govt. Tech H S & Jr College Nasik	HPT Arts & RYK,Sc College Nasik	Vidhya Bharti Vocational Jr College Amravati	Ganesh Das Rathii Jr College Amravati	Shivaji MPHS & Jr College Amravati	Patuck Tech H.S & Jr College Mumbai	Mhalsakant Jr. College Pune
1	During school hours	12 24.66%	6 10.34%	39 65.21%	11 21.45%	22 45.83%	3 15.62%	21 65.62%	71 77.17%	21 70%	
2	After the school hours	15.00% 33.33%	19.00% 32.04%	16.00% 27.27%			3.00% 15.62%	3.00% 9.37%	13.00% 13.04%	9% 30%	58 100%
3	Before school hours		5 8.82%				1 3.25%				
4	Any time suitable to industry	26 57.77%	29 50.00%	4 7.52%				7 25.11%	9 9.89%		
5	Any other (summer vacations)	8 17.77%	18 31.00%		13 28.57%		8 40.62%				

As regards availability of books and instructional material 90.33 per cent teachers have reported 'adequate', whereas 8.07 per cent mentioned 'inadequate' and 1.60 per cent 'not available'.

'Adequate' classroom space was reported by 96.77 per cent teachers, whereas only 3.23 per cent teachers mentioned as 'inadequate'. According to 98.39 per cent teachers the teaching staff/demonstrators are 'adequate' and 1.61 per cent as 'inadequate'. About 97 per cent teachers mentioned the adequacy for technical staff as against only 3.23 per cent as 'inadequate'. Nineteen per cent teachers mentioned that the training time in collaborating agencies is 'after school hours', during school hours (30 36%), before school hours (30%), any time suitable to the industry (15%) and during school vacation (4.8%).

As against 100 per cent principals and teachers, 85.83 per cent students also agree with the adequacy of infrastructural facilities, only 6.36 per cent mentioned inadequacy and remaining 3.79% did not respond. In the context of availability of software (raw materials) 83.77 per cent industries mentioned as 'adequate', 7.18 per cent as 'inadequate' and 4.73 per cent mentioned 'not available' whereas 4.11 per cent remained silent on the issue.

In response to transaction time a large number of students (97.5 %) mentioned as 'adequate'. About 90 per cent said time for individual practice as 'adequate' against only 9.65 per cent students reported as 'inadequate'.

On availability of library/books 83.78 per cent had shown 'adequacy', 7.59 per cent have shown 'inadequacy', whereas 8.62 per cent as 'not available'. According to 89.11 per cent students, instructional material is adequately available, whereas 4.92 per cent students said they are 'inadequate', and 1.64 per cent 'not available'. About 4 per cent did not respond.

Regarding availability of classroom space a majority of students (95.68%) have indicated 'adequate', only 4.32 per cent reported it to be 'inadequate'. According to 96.91 per cent students, teaching staff/demonstrators are adequately available. A very small percentage (3.09%) indicated it as 'inadequate'.

Table 6 : Views of all principals on school-industry-linkage

	Infrastructural facilities	Adequate		Inadequate		Not Available	
		No	%	No.	%	No	%
1	Workshop / Laboratory						
	(i) Hardware	10	100%				
	(ii) Software	10	100%				
2	Transaction time	10	100%				
3	Time of individual practice	9	90%	1	10%		
4	Library						
	(i) Books	9	90%	1	10%		
	(ii) Instructional materials	10	100%				
5	Classroom space	9	90%	1	10%		
6	Teaching staff / Demonstrator	10	100%				
7	Technical staff	10	100%				

Table 7 : Views of all teachers on school-industry-linkage

	Infrastructural facilities	Adequate		Inadequate		Not Available	
		No	%	No	%	No	%
1	Workshop / Laboratory						
	(i) Hardware	60	96.77%	2	3.23%		
	(ii) Software	60	96.77%	2	3.23%		
2	Transaction time	62	100%				
3	Time of individual practice	61	98.39%	1	1.61%		
4	Library						
	(i) Books	62	100%				
	(ii) Instructional materials	56	90.32%	5	8.00%	1	1.68%
5	Classroom space	60	96.77%	2	3.23%		
6	Teaching staff / Demonstrator	61	98.39%	1	1.61%		
7	Technical staff	60	96.77%	2	3.23%		

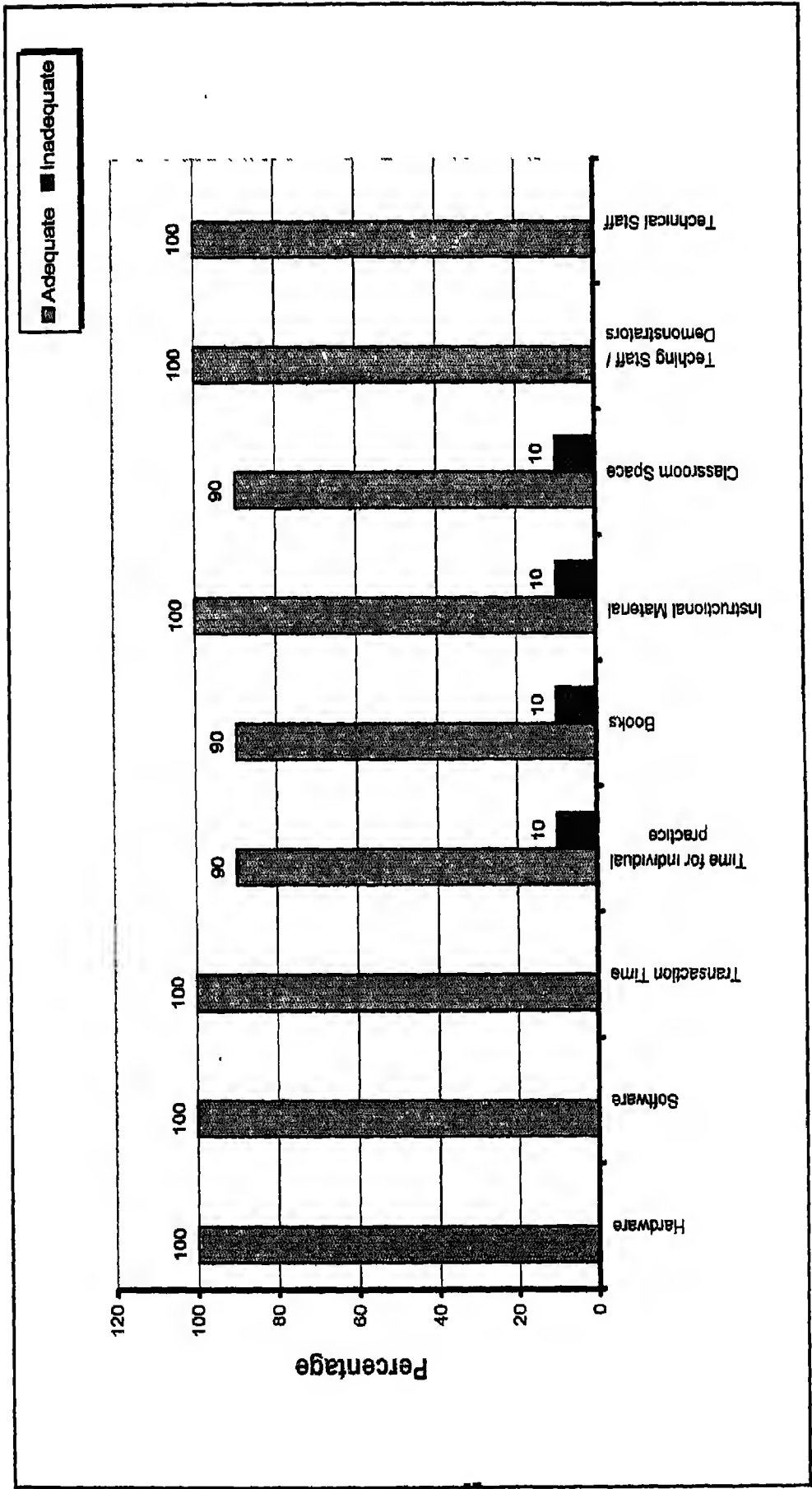


Fig. 3 Views of principals of school-industry-linkage

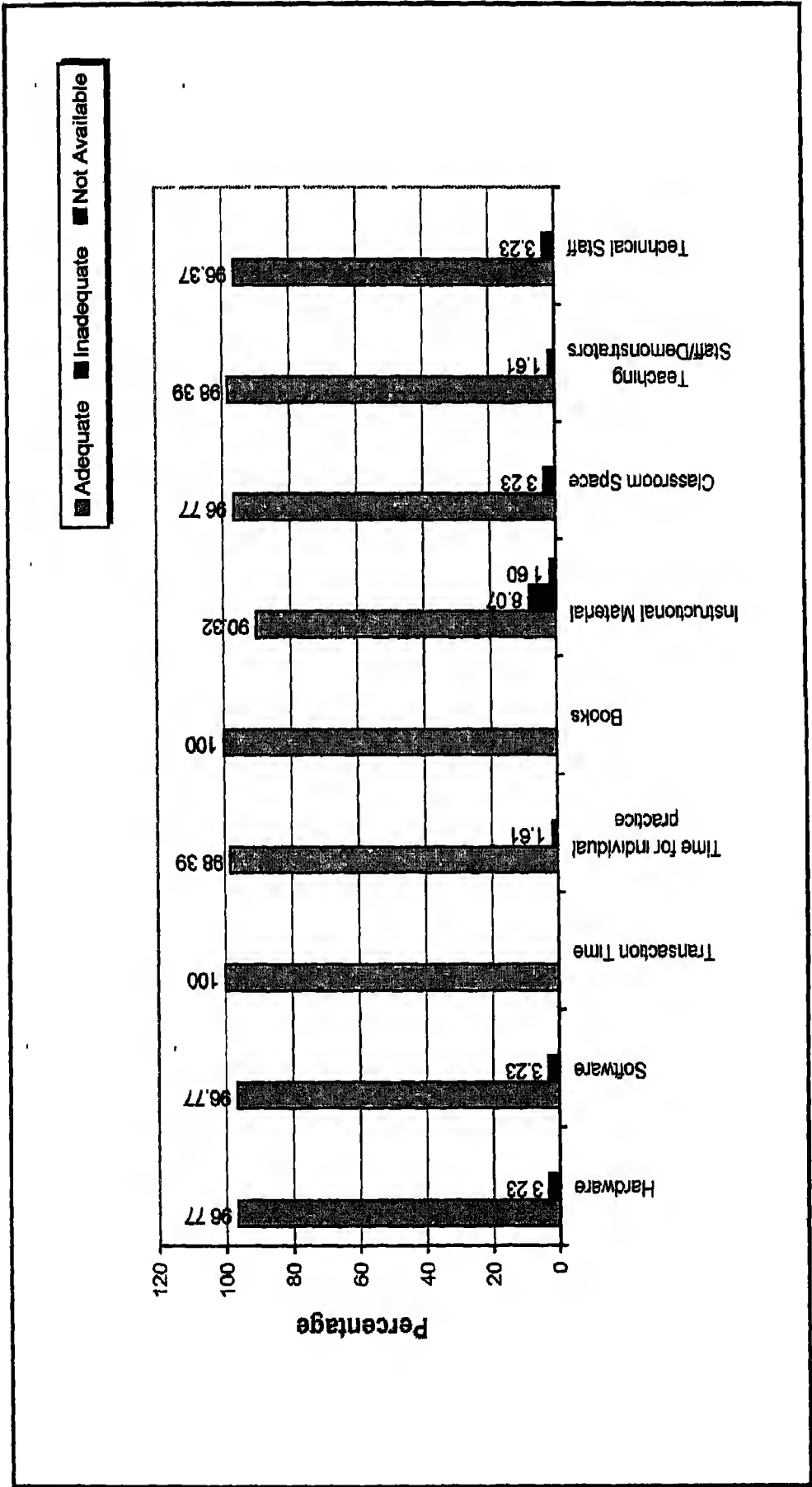


Fig.4 Views of teachers on school-industry-linkage

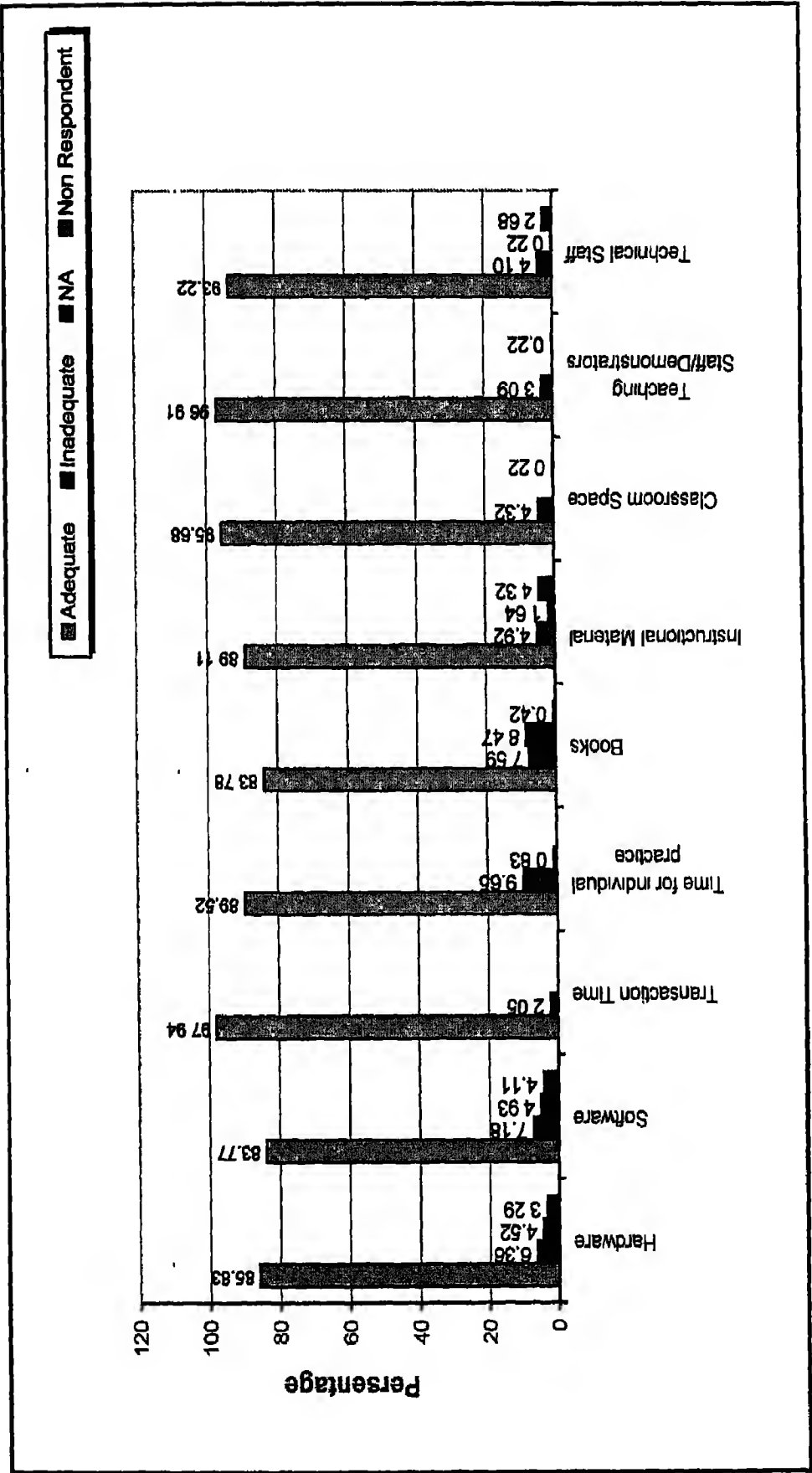


Fig. 5 Views of students on school-industry-linkage

As regards the availability of technical staff, according to 93.22 per cent students it is 'adequate', only 4.10 per cent have mentioned as 'inadequate' and 2.68 per cent mentioned non availability.

It is observed that 42.91 per cent students have said that timing of training in collaborating industries is 'during school hours', 41.68 per cent 'after school hours', 11.49 per cent 'before the school hours' and 5.33 per cent 'during vocation'. Besides, 36.34 per cent students have indicated that they had to go for practical training at any time suitable to the industry.

Overall satisfaction by majority of students is seen in terms of adequacy for training facility and arrangements. Less than 10 per cent students have indicated inadequacy of facilities, books, technical staff etc.

Collaborating Industries (CIs)

Collaborating industries/agencies play key role in skill development of vocational students. It is important to assess the roles and extent of participation of industries in the implementation of VEP. Also, there is need to take into account the modalities being followed in establishing School-Industry linkages by the institutions. In view of this, the information through questionnaires and personal interviews has been obtained. These 10 institutions under the study have established linkages for 13 trades with 231 industries which includes 15, 8 and 215 government, aided and private industries. The responses from 30 collaborating industries are given below (Table 10 & 11) :

With regard to the expenditure on maintenance and wear and tear of machine and equipment, 90 per cent industries bear the cost whereas only 10 per cent industries share the cost with students. There is an agreement that heavy expenditure on this is borne by the industry and only small amount is taken from the students.

This is encouraging to note that there is maximum sharing is done by industries and less burden is on students.

Table 8 : Views of all students on school-industry-linkage

	Infrastructural facilities	Adequate		Inadequate		Not Available		Non Respondent	
		No	%	No	%	No	%	No	%
1	Workshop / Laboratory								
	(i) Hardware	418	85.83%	31	6.36%	22	4.52%	16	3.28%
	(ii) Software	408	83.77%	35	7.18%	24	4.93%	20	4.12%
2	Transaction time	97	97.93%	10	2.25%				
3	Time of individual practice	436	89.52%	47	9.65%	4	0.83%		
4	Library								
	(i) Books	408	83.98%	37	7.55%	42	8.47%		
	(ii) Instructional materials	434	89.11%	24	4.92%	8	1.64%	21	4.33%
5	Classroom space	466	95.68%	20	4.32%				
6	Teaching staff / Demonstrator	472	96.91%	15	3.09%				
7	Technical staff	454	93.22%	20	4.10%	13	2.68%		

Table 9 : Views of respondents on schedule of training in collaborating industries

S No.	Training Schedule	Principals		Teachers		Students	
		No	%	No	%	No	%
1	During the school hours	6	60	36	58.7	209	42.91
2	After the school hours	3	30	19	30.64	203	41.6
3	Before school hours	1	10	7	11.3	56	11.49
4	Any time suitable to the industry	9*	90			177	36.34

Table-10 : Tradewise and institutionwise collaborating Industries

S No	Vocational Courses	Name of the Institutions											Total
		Dinanath Jr College & High School Nagpur	Govt Tech H S Cum Ind. School Nagpur	RNC Arts, JDB Comm & NSC Sc College Nasik	Govt Tech H S & Jr. College Nasik	HPT Arts & RYK,Sc College Nasik	Vidhya Bharti Vocational Jr College Amravati	Ganesh Das Rathji Jr College Amravati	Shivaji MPHS & Jr College Amravati	Patuck Tech H S & Jr College Mumbai	Mhalsakant Jr College Pune		
1	ET	G A P T	5 11 11	11 11	11 11	3 3	9 9	8 8	3 3	6 6		0 0 56 56	
2	MREDA	G A P T	4 17 4	17 17	25 25	6 6	5 5	0 0	0 0		10 10	0 0 67 67	
3	IHK	G A P T	3 3	0 0								0 0 0 3 3	
		T	3	0	0	0	0	0	0	0	0	3	
4	MS	G A P T	1 1	0 0								0 0 0 1 1	
		T	1	0	0	0	0	0	0	0	0	1	
5	MLT	G A P T			11 11		1 2 3		6 2 4		3 3	6 3 20 28	
		T	0	0	11	0	0	0	12	0	0	28	
6	BM	G A P T							4 4		10 10	0 0 14 14	
		T	0	0	0	0	0	0	4	0	0	14	
7	TT	G A P T					1 8 9					0 1 1 8 9	
		T	0	0	0	0	0	0	0	0	0	9	

S No	Vocational Courses	Name of the Institutions										Total
		Dinanath Jr College & High School Nagpur	Govt Tech H S Cum Ind School Nagpur	RNC Arts, JDB Comm & NSC Sc College Nasik	Govt Tech H S & Jr College Nasik	HPT Arts & RYK, Sc College Nasik	Vidhya Bharti Vocational Jr College Amravati	Ganesh Das Rathu Jr College Amravati	Shivaji MPHS & Jr College Amravati	Patuck Tech H S & Jr College Mumbai	Mhalsakant Jr College Pune	
8	AET	G A P					1					1 0 23
		T	0	0	0	0	9	0	0	4	11	24
9	CS	G A P							3 1			3 1 0
		T	0	0	0	0	0	0	4	0	0	4
10	MT	G A P										0 0 6
		T	0	0	0	0	0	0	0	3	0	6
11	FM	G A P							5 2 1			5 2 1
		T	0	0	0	0	0	0	8	0	0	8
12	Hort.	G A P							1 4			0 1 4
		T	0	0	0	0	0	0	5	0	0	5
	TOTAL	G A P	0 0 0	0 0 0	0 0 0	0 0 0	1 0 16	6 2 11	8 4 5	0 0 18	0 0 31	15 8 203
		T	13	31	47	9	17	19	17	16	31	226

The expenses on accessories such as parts of machinery, tools, etc. are borne by industries (76.66%), only 6.66 per cent industries mentioned that this is shared with students on equal basis, remaining 6.66 per cent industries did not mention anything on this issue.

On the issue of supervised training imparted at the CIs, 90 per cent of industries mentioned that, students use the hardware/ machine under supervision, only 10 per cent industries allow the students use the hardware without any supervision. With regards to the use of costly, sophisticated and sensitive equipment in the training 33.33 per cent industries reported that these are only for demonstration, whereas 50 per cent industries have allowed to use such equipment under the supervision, and remaining 16.67 per cent industries allow them to use these equipment only after acquiring required skill.

Majority of industries has allowed the use of costly equipment by students under supervision. Although this strategy gives acquaintance but does not give enough time and practice for handling equipment and machines.

As regard the use of software (Raw Material/Gas/Chemicals etc.) the modalities being followed involve the arrangements as the first being the cost of consumable items is entirely borne by the 50 per cent industries where as 23.3 per cent mentioned that there is an agreement between the school and industry for equal sharing of the cost (16.67%) with school, besides 10 per cent have a separate arrangements by them.

Such arrangements indicate that the school has to make some provision for raw material which is equally shared (50%) by the industries as a social obligation.

An assessment has also been made whether the products manufactured by the students are marketable and incentive/stipend is given to students. Only 10 per cent industries have told that stipend is given to trainees. In the students' profile it was noted that they are earning to the extent of Rs. 500/- to 2000/- for the products produced by them. About 35 per cent industries mentioned that the students are being provided the facility of conveyance, working lunch and free lodging. However,

remaining 53.33 per cent industries have some reservation and they remained silent on this issue.

It can be presumed that paying stipend in product development provides some financial support as well as to motivate the students to work hard.

The modalities for the use of experts, teachers, trainers and demonstrators were also examined. The response in this context of payment of experts coming to the school for demonstration and practicals, 86.66 per cent industries are arranging such facilities free of cost. Regarding honorarium to the experts of industry is given by the school for demonstration as mentioned by 86.68 per cent schools that honorarium is paid on hourly basis, whereas 6.67 per cent pay on monthly basis and 6.67 per cent did not respond.

In the context of regular teaching by engaging experts of industry about 67 per cent industries arrange conveyance for the experts to the school for teaching, whereas rest did not respond. Schools (13.34%) pay honorarium to the experts on monthly basis, 10 per cent schools on hourly basis and remaining 10 per cent have not given their views.

On this issue there seems no uniform strategies being followed by the institution or industry. Deployment of experts from industry or some professionals as experts seems to be a critical issues for SIL.

It was also examined as to whether supporting staff for the purpose of training is available or not. Industries have reported that such staff is made available free of cost where as (13.30 %) on payment basis (13.30%). Remaining 33.34 per cent industries remained silent on this issue.

On the issue for the modality for time schedule for imparting training to the students, 76.67 per cent industries give training 'during working hours of industries', 13.33 per cent industries 'after working hours', whereas in 10 per cent industries it is 'during and after working hours'. A large percentage of CIs arrange training programme during working hours so as to use the students as work force for them without payment. The industries who impart training after working hours feel that

there normal working should not be disturbed. Third strategy adopted by some industries is that they involve students at the time of production work and incentive is given to them.

These three strategies adopted by the industries seem to be beneficial to students but on the other hand care should be taken to see that they are not being used as labour.

On the question of a particular period for training, 33.34 per cent industries responded that throughout the year training is given, and 33.66 per cent give training in a specified period. Remaining 30 per cent industries do not respond.

As regards the time spent in training 64.67 per cent industries mentioned that the training is given for 6-7 days in a fixed week, 16.66 per cent have mentioned this being arranged in a particular month, and 16.67 per cent mentioned that the total period is 60 days in a year

Regarding library facilities, 70 per cent industries do not have library facilities, 16.66 per cent have made some provision for library, whereas about 13 per cent did not respond. Industries were enquired about availability of instructional material to students. In this regard, 76.66 per cent industries have mentioned that instructional material is being supplied by the industry free of cost, copies/photocopies of the material is managed by the trainees themselves (3.33%) and 6.67 per cent supplied on the condition that students returned after use. Remaining 13.34 per cent have not given any information.

As regards monitoring of SIL, 80 per cent of industries indicated that it is regularly monitored whereas 20 per cent did not comment.

In the context of School Advisory Committee/SIL Committee, the schools have different modalities for constituting the committee. The members include head of the school (70%), head of CIs (33.66%), Vocational Teachers (86%), workshop supervisor (46.66%), and students representatives (33.16%).

According to 13.33 per cent industries, the monitoring committee meets once in a year, 73.33 per cent organise the meetings twice in a year, and remaining 6.67 per cent mentioned that the meeting is held only in emergency and 6.67 per cent remained silent.

As far as monitoring committee and frequency of meeting is concerned no fixed norms are followed. Also, there seems to have no involvement of the State Directorate of Vocational Education & Training.

A majority of industries (76.66%) reported that laboratory/workshop supervisor is often present during the training, 3.33 per cent said that only for few days the supervisor monitors training, whereas only 10 per cent industries reported supervision throughout the training.

As regards the question of presence of the vocational teacher during training, only 3.33 per cent mentioned that teacher is present throughout the training, 40 per cent mentioned teacher is present often, and 30.34 per cent said teacher is present for some days. Only 3.33 per cent told that the teacher is rarely present, whereas remaining 20 per cent remained silent.

As reported by CIs the evaluation of skill during training in the industry was also conducted and certified by the industry itself (73.33%), and 3.30 per cent conduct the training but do not give certificates. Remaining 23.34 per cent industries did not comment.

Above analysis of present findings suggests that no norms/directives of DVE&T for certification exist. This needs to be taken care off.

ADVANTAGES AND CONSTRAINTS IN SIL

The SIL component of VEP offers many advantages to schools and student in terms of training facilities, expenditure of raw materials, wear and tear, sparing their technical staff for training, etc. Though there are some problems in planning and execution of SIL. Hence there is a need to take care of these constraints by way of mutual adjustments between school and industries. In this backdrop, the views of

Table-11 : Views of owners / representative of CIs on Collaborative arrangements

S. No.	Items	Respondent (No.)	Percentage (%)	Non Respondent (No.)	Percentage (%)
1	Repair and maintenance, wear and tear of hardware				
a	Entire cost borne by the industry	27	90		
b	A consolidated (agreed) amount given by the school				
c	Cost shared by both school and industry				
d	Any other (please specify)	03	10		
2	Accessories for training				
a	Entire cost borne by the industry	23	76.66	5	16.67
b	A consolidated (agreed) amount given by the school	02	6.66		
c	Cost shared by both school and industry				
d	Any other (please specify)	02	6.67		
3	Handling of hardware/machines/equipments etc.				
a	Under supervision	27	90		
b	Independent use	03	10		
4	Handling costly/sophisticated/sensitive instruments				
a	Only demonstration	10	33.33		
b	Use under supervision	15	50		
c	Independent use for training				
d	Use after acquiring required skills	5	16.67		
5	Modalities for the use of Software (raw materials/gas/chemicals etc.)				
1.	Cost of consumable items				

Contd

6	a	Entire cost borne by the industry	15	50	07	23 33
	b	A consolidated (agreed) amount given by the school				
	c	Cost shared by both school and industry	05	16.67		
	d	Any other (please specify) _____	03	10		
	2.	In case, products are marketable, what is the mode of incentives				
	a.	Monetary incentive to trainees	03	10	16	53.33
	b.	Free conveyance/working lunch/lodging to trainees	11	36 66		
	c.	Any other (please specify) _____				
	Modalities for the use of Experts/Teachers/Trainers/ Demonstration, etc.					
	a	Free of Cost	26	56 66	04	13.33
7	b	Honorarium paid by the school				
	i	Monthly basis	02	6.67	2	6 67
	ii	Hourly basis	26	86.66		
	c	Experts visit school for teaching purpose				
	i	Free of cost/conveyance	20	66.66	03	10
	ii	Honorarium paid by the school on Monthly basis	04	13.34		
	iii	Hourly basis	03	10		
	d	Supporting staff is available				
	i	Free of cost	04	13.33	10	33.34
	ii	On payment basis	16	53.33		
	Modality for the time schedule					
	a	Training is given during working hour of the industry	23	76.66		

Contd

8.	b	Training is given after working hour of the industry	04	13 33		
	c	Training is given both during and after working hour of the industry	03	10		
	d	Training is given			09	30
	i	In a specific period (months)	11	36 66		
	ii	Spread throughout the year	10	33.34		
	e	Total time spent during training				
	i	In a week _____ days	20	66 67		
	ii	In a month _____ days	05	16 66		
	iii	In a year _____ month/days	05	16 67		
	Modalities for the use of instructional material/librar facilities					
	1	Library				
	a.	Not available in the library	21	70	02	13.44
	b.	Available	05	16 66		
	(i)	Trainees are allowed to read in the library				
	(ii)	Trainees are permitted issue books to take home				
	(a)	By depositing caution money	02	6.67		
	(b)	Without depositing caution money				
	(iii)	Trainees are not issued books for home				
	(iv)	Trainees have no access to library to read				
	2	Instructional Material				
	a	Supplied by the industry free of cost	23	76.66	04	13.34
	b.	Supplied on cost basis				
	c	Copies/photocopies managed by the trainees themselves	01	3.33		
	d	Any other (please specify) _____	02	6.67		

Contd

9.	Monitoring of School Industry Linkages					
a	There is a monitoring committee	24	80	06	20	
b	Does monitoring committee include the following members					
i	Head of School	09	30			
ii	Head of collaborating Institution	11	33.66			
iii	Vocational Teacher	27	90			
iv	WS/Lab Supervisor	14	46.66			
v	Student representative	11	36.66			
vi	Any other (please specify)					
c	The monitoring committee meets					
i	Once a year	04	13.33			
ii	Twice a year	22	22.33			
iii	Only in emergency					
d	During Training Time Lab/WS Supervisor is present			30	10	
e	Vocational Teacher is present					
i	throughout	10	33.33			
ii	often	03	10.00			
iii	some days	02	40.40			
iv	rarely	05	16.67			
	Evaluation of skill in training in the industry					
a	Conducted and certified by the industry	22	73.33	07	23.34	
b	Conducted but not certified by the industry	01	3.33			
10						

respondents / stake holders through questionnaires and personal interview were obtained, with regard to the issues mentioned above including the problems of students such as transportation and adjustment of time table for training schedule

According to the authorities of the school/colleges one, of the advantages of SIL is that the transaction of the major practical part of the curriculum is taken care off by the industry. On the other hand this arrangements is helpful in skill development of students of the concerned trade. The teacher mentioned that collaborations reduces their load of practical teaching. The school authorities admits that this arrangement of SIL lessens the monetary burden on part of school expenditure as most of the industries do not take any money for raw material, training fee etc.

The students mentioned that linkages established with industries for the vocational courses also help them to get exposures and confidence by getting acquainted with trade, modern technology and use of sophisticated equipment, besides, collaboration gives easy access to industries for placement. Students also mentioned that through SIL they are able to get valuable guidance and know how in particular trade from the concerned industry.

On the part of industry, as they have mentioned that they are able to cut some labour expenditure, though care is taken by the institutions and teachers to see that students are doing only required activities related to the particular trade.

The constraints mentioned by the principal and teachers include the distance of the industry and lack of transportation facilities for students, this all result in wastage of time. Training schedule is during school hours also cause problems in conducting regular theory classes.

Another problem mentioned by students and industry is that of their age. These boys complete their vocational courses at the minor age of 16 at which they cannot be employed in the industry inspite of the interest of industry owners to employ them or setup up their own venture by taking financial assistance for the bank due to age bar.

Industries mentioned that some time teachers are not able to be with the students at CIs because different groups of students go to different industries, therefore managing their training schedule becomes a problem. Some times students put them to heavy loss due to careless handling of equipment. In view of this long time presence of the industry supervisor is managed. Also, there is no sharing of expenses on wear and tear of machines/equipment with the institutions, which seems to be the major bottleneck of SIL.

The views of respondents including those of CIs leads to conclude that there is need to review the arrangement of teachers at CIs, transportation of students and sharing of expenditure and wear and tear of equipment, be given top priority for successful establishment of SIL.

Roles of different Agencies in School Industry Linkage

The School-Industry Linkage component of VEP involves various agencies and key role players. It is imperative to note that the management structure as suggested in CSS for the implementation of VEP at different levels, must be functional to facilitate the programme. To achieve success, it is important that the precieved roles of different stakeholders are translated into action. Therefore, the roles of various stake holders in planning managing and delivering VEP in general and SIL in specific, was the focus of the interviews with different respondents. The outcome of these responses are given below :

These include the State Director of the DVE&T who is overall authority and guide of the linkage programme, District Vocational Education Officer as the nodal agency, the Principal as the manager, facilitator and controller, the Vocational Teacher as the subject expert, facilitator and guide, and the student as the receiver of the training.

Director

With respect to administrative demand of VEP, the Director is the authority to take initiative and formulate strategies for over all success of VEP. Emphatically, in special reference to SIL, the Director plays key role in negotiating with industries

and strengthening the management structure at district and school level by giving directives and monitoring effective establishment of SIL.

The Director, DVE&T expressed strong views to strengthen SIL arrangement that need to take legal initiative for participation of industries. Also, he mentioned that it is necessary that MOU be signed for establishing SIL and apprenticeship training between industries and institutions or between Government.

The Director, was also of the view that principal and teachers should necessarily be involved in monitoring of SIL especially in terms of time for individual practice and students at the industry should not be used as cheap labour.

As opined by Director and Dy. Directors (2)* that CIs participation is very important in manpower assessment, selection of vocational courses, curriculum and Instructional Material development.

DVEO

One of the most important views of DVEOs (4)* is that there should be some norms by the State Government that every industry must be on the rolls of some institution as training agency. Officers of the district office strongly felt that their participation should be ensured as nodal officer for liasoning with industries by necessarily including them in SAC/linkage committee. District Vocational Officer of Nasik and Nagpur mentioned that there should be provision of security deposit by the school in the industry.

Principal

On the issue of participation and role of participants in SIL, all the principals (10)* agreed to take initiatives and for intensive participation. They, as the head of the institution, should hold frequent meetings with the owner of industry to facilitate effective linkage with good industries having adequate training facilities, regular and frequent support of technical staff for teaching and demonstration, etc. Another important role of the principal is to involve eminent resource persons in the SAC for establishing linkages. Principals play important role in placement of students.

Principal may suggest strategies to the State Government to get certificate from for CIs to motivate them. Principals mentioned that CIs desire that they (Principals) may suggest strategies to the Government for accrediting 30 good CIs as recognized trainer agencies and accordingly some certificate be given by the Government to CIs to further motivate them.

Head of the Collaborating Institutions (Owner/Manager)

Owners of the industries (50)* shared their views on SIL in a big way programme. Majority of industry owners/managers stressed the importance of taking training at CIs by the vocational students in view of acquiring competency and development of skills. In view of this, they said that time for individual practice for every student should be given adequately for which they try to make all possible efforts and adjustments.

They suggested that some certificate for recognition as accrediting agency/training institute should be given to the CIs by the State Government to acknowledge their roles in the implementation of VEP regarding SIL.

They also opined that the participation by institutions in terms of providing facility for training such as providing transport and bearing some expenditure on raw material and wear and tear of equipment is essential.

According to principals, teachers and students, the Head of the Collaborating Industry has the most important role to play in SIL as the provider of training and accrediting agency. Besides, CIs should be involved in manpower assessment, selection of courses, curriculum and instructional material development and apprenticeship training. CIs showed positive response on these issues and mentioned that students should take keen interest in training at CIs. For this, teachers should also cooperate by participating in the training and bringing about awareness in students for various types of jobs, industries, liaising with industries for placement. Sparing technical staff for curriculum transaction, both for theory and practical at the school/industry is also, to be taken care off by the CIs. Also on the part of the industry it is necessary to assess the quality of training and ability of students to work and finally a certificate of having developed skills and

competencies should be given by the industry obtaining desired training at CIs. Students and teachers should also be serious in taking training in a disciplined way, was special comment of CIs.

Teachers

Teachers (45)* showed their interest in coordinating the SIL programme by their intensive involvement right from liaising with industries for collaboration upto students training, monitoring, evaluation and certification. Teachers mentioned that this is important on the part of every vocational teachers that they negotiate with CIs for time table adjustment and extending facilities for individual practice of students at CIs located in the vicinity of school. They expressed that it is necessary to involve a good number of industries for one vocational course to enable the students to get more time for individual practice. In a large group, the students are not able to handle the equipments for a longer time. Also, in summer vacations, if students are attached with industries on whole time basis, they would be able to get more expertise. The learning by demonstration and doing practical work themselves at industries is essential for transaction of practical part of the curriculum, therefore during regular class, students must be sent to CIs.

Students

Students (278)* spoke freely shared their views as SIL arrangement is important to them in terms of skill development, awareness regarding new technologies in understanding the working and set up of industries of related trades. This also brings in the confidence with the element of entrepreneurship and management aspects including handling day to day problems and emergency situations if any. Students in principle agreed, that the SIL and OJT components should be made compulsory for every course. They realised that they should maintain discipline, punctuality and should be serious, attentive and sincere during the training programmes. Students stressed for making available the transport facility for them to undertake training at CIs. They mentioned that big industries be identified for SIL. An interesting point was mentioned by the students that they want to campaign about the advantages of SIL and its role in the development of skilled manpower through the active participation of the industry.

Over all Assessment of Institutions

In order to assess the successful implementation of SIL in 10 institutions of the present case study, the out come of all the tools used have been analysed. For overall assessment and successful institutions, the indicators include teacher factor, linkages, and adequacy for infrastructural facilities and employment scenario of vocational pass outs. This assessment was used to identify viable and less viable institutions. The criteria developed for the assessment of institutions performance are given below :

A. Following criteria was formed for assessment :

1. Vocational Course - 3 marks for each course, (max. 15 marks).
2. Enrolment of students - 5 marks for each 30 students, (max.15 marks)
3. Qualification of teacher - Matric / ITI – 1 marks/teacher
Dip./Graduate – 2 marks/teacher
P.G. 3 marks / teacher
Professional Degree – 4 marks / teacher
4. Past / current experience - 1-5 years – 1 marks / teacher
6-10 years – 2 marks / teacher
11-15 years – 3 marks / teacher
16 – and above – 4 marks / teacher
5. Training - 3 marks each / teacher
6. Achievements - 4
7. Awards - 4
8. Linkages - Every collab. industry/part thereof-8 marks
(maximum 40 marks)
9. Adequacy shown by Principals, teachers and students - 50% - 1
60% - 2
70% - 4
80% - 6
90% - 8
100% - 10
10. Pass out - 50% - 10
51-75% - 20
76% above - 30

11. Placement - Each 10% and apart there off – 8 students
max. 40 marks

B. Total Assessment Marks - 300

C. Criteria for rating viable and less viable institutions : Institutions obtained above 50% marks are designated as viable and below 50% marks are less viable.

Based on above ratings and grades were given to the institutions and thus viable and less viable institutions were identified. The institutions obtained above 50 per cent marks are designated as viable whereas below 50 per cent, they are considered to be less viable.

Based on the percentages with regard to adequacy of infrastructural facilities, number of collaborating industries and training schedule, the ten institutions have been given a merit position (Table – 11).

The assessment indicates that the performance of the institutions depends on the adequacy of infrastructure and other facilities, good number of CIs and training facilities for quality training and high employment (wage/self) percentages of vocational pass outs.

Secondly, good performance of students has been shown because of SIL arrangement, which also contributed to some extent for their placement. Thirdly, the involvement and efforts of principals/teachers for the monitoring training programmes at CIs.

Another observation includes that more number of CIs provided more time and satisfaction to students for individual practice. This enhances the employability as a result of desired skill development.

It is an achievement of the 10 institutions under study to provide employment to vocational pass out to the extent of 47% in 4 years time.

Table - 12 : Indicators for identifying viable and less viable institutions

S No	Name of the institutions	No of courses	Enrol-ment	Qualifi-cation of Teacher	Expenence of Teachers		Training Obtained by Teachers	Achieve & Publi	Awa-rds	Linkages made	Adequacy in infrastructural Facility / training		Result (%)	Place of Student	Total Marks	Marks in %
					Past	Current					Principal	Teachers				
	Marks Alloted	15	15	25	25	25	15	15	15	40	10	10	10	30	50	300
1	Dnanath Jr College & High School, Nagpur	12	10	25	9	13				16	10	8	8	20	15	146 48 66
2	Government Technical H.S Cum Industial School, Nagpur	9	10	10	15	17				32	10	10	10	20	25	168 56 00
3	RNC Arts, JDB Comm & NSC Science College, Nasik	9	10	12	6	6				32	10	10	8	20	15	138 46 00
4	Government Technical High School & Jr College, Nasik	9	10	16		20				8	10	8	10	30	24	146 48 60
5	HPT Arts & RYK Science College, Nasik	12	10	22	7	13	12			24	10	10	10	30	30	190 63 33
6	Vidhya Bharati Vocational Jr College, Amravati	6	5	11	9	10				16	10	8	8	10	35	128 42 66
7	Shri Ganesh Das Rathni Jr College, Amravati	9	10	18	6	11			15	16	10	10	10	10	50	175 58 33
8	Shri Shrivaji Multi Purpose High School & Jr College, Amravati	9	15	14	6	19				16	9	10	8	20	5	131 43 66
9	Patuck Technical High School & Jr College, Mumbai	15	5	16	4	10				24	10	10	4	30	40	168 56 00
10	Mhalsakant Jr College, Pune	9	10	12	8	12	12			32	10	10	10	20	35	180 60 00

Major Findings

CHAPTER 6

MAJOR FINDINGS

1. The present study revealed that SIL was being implemented with appreciable success in Maharashtra and the same could be improved further so as to become a model for emulation by other states, given a few alterations in implementation strategies.
2. Majority (70%) of institutions taken up in the present study were found to have private management.
3. The selection of courses in majority (50%) of institutions was done on the basis of vocational survey, thus the courses were need based.
4. All the institutions had maximum enrolment in ET followed by MREDA and BM vocational course, reflecting strong popularity and demand of the same in the community.
5. Out of 12 vocational trade offered in 10 institutions studied about 50-93 per cent students passing out from courses like Building and Maintenance, MREDA, TT, MLT, ET, AET succeeded in getting gainful employment in decreasing order.
6. Adequate number of teachers were employed in all the trades. The teachers possessed qualifications including professional degrees such as MBBS for MLT and BE for ET vocational courses.
7. It was revealed by the study that majority of teachers did not undertake any training in vocational education including that organized by NCERT.
8. The teachers and the principals expressed overall satisfaction as against dissatisfaction expressed by students regarding infrastructure facilities and training time for individual practice at CIs in MLT courses.
9. A total of 231 industries, majority of them private were collaborating with these 10 Junior Colleges. Looking to the strength of students in each trade, the number of CIs seems to be adequate.

- 10 Most of the CIs were found to be bearing the entire cost of repair and maintenance of equipment although sometimes the cost of wear and tear of the equipment is also shared with students. However, no school had a formal agreement with CIs regarding sharing of expenses on the same.
11. Collaboration in general showed that maximum number of linkages were established in MREDA followed by ET&MLT vocational courses. However MPHS Shivaji College, was able to make linkages for agriculture related courses also
12. Generally industries were allowing the use of equipment and machine under their supervision. Very few industries allowed independent use by students. Sophisticated and sensitive instruments were to be used only for demonstration by the industry representatives.
- 13 A few industries gave some stipend as incentive to students involved in production which provides motivation to them. It is good that at this stage of education, vocational students are able to earn some money.
14. The industries generally accommodated students to provide training before/during/after the school hours or any other time suitable to the industry. The time adjustment was based on the type of trade, convenience of the industries and sometimes also for students convenience (in case where industries are located 20 – 80 Kms. range). All this indicates that all efforts were being done to assure that training be given to students with least inconvenience to them.
15. The duration of the training, depending upon the type of trades, varied from a month's time to 260 days.
16. The majority of institutions have constituted the IAC/SAC/Monitoring Committee for monitoring SIL. These committees include members from industries, vocational teacher and principal.

17. It was found during the training, teachers and supervisors were generally present, though teachers sometimes were unable to attend because the students were required to go to different industries located far away and also at different time slots.
18. Majority of industries also evaluated the level/degree of skill development and performance of students and certificates for training were given to the students.
19. One of the advantages of SIL as mentioned by all the respondents was that it is extremely essential for the skill development and for acquiring confidence at work.
20. One of the major constraints in establishing SIL was found to be unwillingness of industries due to lack of incentives and extra burden on them for time, expenditure on raw material and monitoring and supervision of training to avoid damage to machines and equipment. Besides, there was no incentive or sharing of expenses from the schools.
21. Quite a large number of industries desired that the government should offer some recognition to the industries taking part in the training of vocational students. Thus, such industries may be designated as "Training Agency of vocational schools" or they may be put on the panel of DVE&T as trainers.
22. Vocational teachers were not always members of SAC or monitoring committees of the schools. There existed no norms or directives from DVE&T for the representatives to be included in these committees. Teachers and students strongly recommended that they should be the members of it.
24. Principals, in general, were of the view that the support of industry is very essential for the development of skills, acquaintance with new machines, equipment, etc. and also for placement of students.
25. The key functionaries of DVE&T suggested that there is a need to give some incentives to industries, or to sign MOU by the industries and Government/ Schools.

26. The strengths of the SIL in Maharashtra as revealed by the study include active participation of DVE&T, schools, industries and students. Though the bottlenecks noticed in the establishment of SIL include no set norms for sharing of expenditure on raw material, any wear and tear and absence of any incentives to industries.
27. The viable institutions as broadly identified in this study had professionally qualified staff, collaboration with a good number of industries, adequacy in infrastructure, books, etc., students performance by having access to industries for individual practice except in the case of MLT courses.
28. As a special mention, the strategies for SIL in these institutions include that it was compulsorily required to establish linkages for every course, secondly the owner or representatives of CIs were the members of IAC which motivated them to collaborate willingly. Thirdly, establishment of linkages with large number of industries was proved to be the most beneficial for students for more opportunity and time for individual practice. In general, these strategies proved to be the strength of SIL in the institutions under this study.
29. The viable institutions include HPT & RYK Jr College, Nasik, Mhalsakant Jr. College, Pune, Shri Ganesh Das Rathī, Amravati, Patuck Technical College & Jr. College, Mumbai and Government Technical High School, Nagpur.
30. Teachers of RNC Arts, JDB Commerce and NSC Science College, Nasik mentioned that the staffing pattern was not as per NCERT guidelines and there was a difference in pay scales also. The teachers were overloaded. They had to take more than 24 periods per week. This was the special mention made by the teachers of this college

All above institutions have formulated modalities for collaboration with industries by having constituted SAC in which representatives of these industries are the active member.

*Summary
&
Conclusions*

CHAPTER 7

SUMMARY AND CONCLUSION

The main objectives of the study were to assess the status of SIL in the institutions of Maharashtra State and to find out strategies and modalities being followed in the state to achieve success in the establishment of SIL.

For indepth study of SIL, information from ten institutions of five different districts was collected. In the selection of institutions, main criterion was that these institutions were running engineering and health & paramedical based courses, which compulsorily require collaborative arrangements.

For collection of data, tools (questionnaire) were developed with the help of subject experts in the Working Group Mode. Through these questionnaires, information and views of respondents (principals, teachers, students, industry representatives, district vocational officers) about the institutions, availability of infrastructural facilities, teacher's profile, extent of linkage and participation of collaborating industries were obtained, besides their views on roles of different agencies/stakeholders and advantages and constraints in SIL were also obtained.

The data were collected by interview-cum-questionnaire method through personal visits to different schools and collaborating industries/agencies. During the visit principals, teachers, students and concerned industry representatives were interviewed and information obtained on the questionnaire. The obtained data were then compiled and tabulated. Based on these data overall status of SIL is discussed.

On the basis of analysis of results, these ten institutions were rated as viable and less viable according to the pre-fixed criteria, such as number of trades, adequacy of infrastructure facilities (hardware, software, books, classroom and time for individual practice for training, etc.), teacher's profile, extent of linkages established and placement of pass-outs.

The overall observation of the study reveals that strong SIL is the key factor behind the success of VEP in Maharashtra. The State Directorate of Vocational Education and Training has done commendable work in establishing linkages with

industries in almost all institutions, which are more than thousand in number. Also all the institutions have constituted School Advisory Committee (SAC) in which the industry representative of concerned area is the member. It was also found that there is substantial participation of industrial people besides active role and involvement of teachers for establishing SIL.

Looking to the pass-out percentage of students, 47 per cent students of these 10 institutions have been employed (wage and self). The popular courses in order of preference given by students are ET, MREDA and BM though the maximum placement of students was noticed in BM followed by MREDA & TT.

The districts having more industrial establishments, or undergoing development have provided good employment opportunities to students in institutions of Mumbai, Amravati, Nasik and Pune respectively.

On the basis of performance of institutions on various pre-determined factors the best institution identified in the study is HPT & RYK College Amravati.

Teacher's factor (number and essential qualifications) in these institutions was found to be satisfactory which contributed to the success of VEP in these institutions. Infrastructural facilities in all these institutions were more or less adequate except non-availability of teachers and instructional material in MLT course in some institutions.

The conclusion derived from the study is that establishment of SIL is the key for achieving success of VEP in the state. Also existence of separate Directorate of Vocational Education and establishment of management structure at all levels (DVE&T, DVE&TO, SAC) has helped in establishing effective collaborative arrangements.

One of the issues raised by the students was regarding more time be given for individual practice specially for using sophisticated equipment and machines. Besides, transportation facilities and sharing of expenditure for wear and tear during training by the students.

Based on the present study it can be said that teacher factor i.e. their professional qualifications, their devotion and active participation has also played considerable role in the success of SIL. The overall status of SIL in Maharashtra strengthens the view that this state may be taken as a model for other implementing states/UTs for establishing SIL. School-industry-linkages in Maharashtra is one sided affair (participation) of the industries as far as mutual benefit is concerned. In view of this it is imperative to note that there is a need to formulate strategies regarding monetary participation (in SIL) of institutions/government for raw material, wear and tear of equipment during the training and transportation facilities. In addition, policy decisions need be taken regarding incentives to be given to CIs and signing of MOU between the DVE&T and industries or between institutions and industries.

Recommendations

CHAPTER 8

RECOMMENDATIONS

On the basis of findings of the present study in terms of success in establishing SIL and views expressed by respondents during interviews and information obtained by questionnaires, following recommendations/suggestion are made for strategies planning and effective implementation of school-industry-linkage component of VEP :

1. Maharashtra State has succeeded in establishing SIL in majority of institutions. The quality of industry participation is also satisfactory. However, SIL could still be strengthened by increased support from the Government (State or Central) by framing policies for mutual inputs and benefits between school and industry.
2. It is suggested that a comprehensive report of the strategies/modalities followed in establishing SIL including the strategies and modalities followed by the state should be prepared by DVE&T and the same may be procured and disseminated to other states/UTs by the PSSCIVE.
3. It is desirable that institutions should time to time review the existing vocational courses to continue or drop the redundant ones and/or to introduce demand driven new courses. Also, DVE&T may issue directive to the institutions including private institutions for review of these courses every 5 years and submit the report of the survey.
4. In case of courses related to engineering including mechanical, automobile and electronics and also agricultural machinery, the old equipment, machines, engines or spare parts, old TV/radio etc. may be taken from concerned collaborating agencies for the establishment of workshops in the school. This arrangement will enable the students for more opportunity for individual practice and saving of transportation time. Industries in turn may be able to save money on wear and tear expenditure and disturbance in their schedule.

5. DVE&T is suggested to give clear-cut directives to DVEOs for their roles in SIL. Close monitoring of district officials should be done for providing support to institution for SIL and placement of students in apprenticeship training.
6. DVE&T/DVEO/ institutions are suggested to take necessary steps to ensure sufficient time for individual practice by placing considerable considering number of students being placed per industry.
7. To encourage more participation of industries in SIL, government should make some strategy for giving incentives to the CIs in form of monetary support, recognition or as accrediting agency or exemption in taxes.
8. Institutions are suggested to make arrangements for transportation of students during training period and sharing some expenditure on wear and tear of equipment.
9. Teachers are suggested to provide guidance and counselling services to students to bring about awareness of new ventures, approach for self employment and wage employment opportunities.
10. Teachers should be given training and refresher courses by the state on regular intervals with regard to VEP, for entrepreneurship development and guidance and counseling.
11. Institutions should develop some mechanism for follow up of vocational pass-outs, and record be maintained for the evaluation of implementation of VEP.
12. In order to ensure successful establishment of SIL, big industrial establishments should also be approached and motivated by the government to join hands for the success of VEP at large.
13. State level/District level awards for best practices in SIL be instituted to encourage and motivate school key functionaries and CIs.

14. In view of the positive response of majority of teachers for their participation in the placement of students, equipping labs/workshops assessment of manpower, it is suggested that the teachers should be involved from the enrolment stage upto the placement of students.
15. It is also suggested that regional level seminars/orientation programmes should be organized by the PSSCIVE to acquaint the key functionaries for establishing SIL.

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PROFORMA प्रपत्र



PSS/CIVS

Project Title : A CASE STUDY OF SCHOOL-INDUSTRY LINKAGES IN VOCATIONAL INSTITUTION OF MAHARASHTRA - Sponsored by ERIC, NCERT, (a constituent Unit of MHRD) New Delhi.

परियोजना शीर्षक : महाराष्ट्र के व्यावसायिक संस्थाओं में विद्यालय उद्योग संबंधों की स्थिति का अध्ययन।
(एरिक, रा.शै.अ.एवं प्र.प (मानव संसाधन विकास मंत्रालय के अखिल एन अभिन इकाई) नई दिल्ली द्वारा प्रदर्शित।

1. Principal/Teacher/students/Industry : _____
प्राचार्य/शिक्षक/विद्यार्थी/ उद्योगइकाई

2. Proforma filled up by :
भरा गया प्रपत्र

- i. Name : _____
नाम
- ii. Designation : _____
पदनाम
- iii. Organization : _____
संगठन

Signature

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GENERAL INFORMATION ABOUT SCHOOL

पिछलाय के बारे में सामान्य जानकारी

1. Name and Address of the School/Institution विद्यालय/
संस्थान का नाम और पता :

A. State District Block
राज्य जिला ब्लॉक

B. Name of the Principal
प्राचार्य का नाम :

2. Type of School विद्यालय के प्रकार :

A Boys ☐
बालक

A Urban ☐
शहरी

B Girls ☐
बालिका

B Rural ☐
ग्रामीण

C Co-Ed. ☐
सहशिक्षा

C Semi-urban ☐
कस्बा

A Govt. ☐
सरकारी

A Govt. aided ☐
सरकारी ऐडिड

B Private ☐
निजी

B Self-financed ☐
स्वयं संचालित

C Co-operative ☐
सहसंबंध

3. Year of the establishment of the Institution/School संस्थान/
विद्यालय का स्थापित वर्ष :

Vocational Courses and
present enrollment व्यावसायिक

पाठ्यक्रम और वर्तमान नामांकन

S.N. क्र.	Name of the courses पाठ्यक्रम का नाम	Year of Starting शुरुवात का वर्ष	No of students (1999-2000) विद्यार्थी की संख्या (१९९९-२०००)	
			XI	XII
1.				
2.				
3.				
4.				

5. Basis (reasons) of selection of vocational courses

व्यावसायिक पाठ्यक्रम में चयन का आधार

a. Selected by the state directorate

राज्य निर्देशालय द्वारा चयन

☐

b. On the basis of vocational survey

व्यावसायिक सर्वेक्षण के आधार पर

☐

c. Selected by the school managing committee from the list of vocational courses offered by the state राज्य द्वारा दी गई सूची से व्यावसायिक पाठ्यक्रम का विद्यालय प्रबंध समुदाय द्वारा चयन।

☐

d. Any other (please specify)

अन्य कोई (कृपया स्पष्ट कीजिए)

☐

6. Future prospects of vocational programmes in the school

विद्यालय में व्यावसायिक कार्यक्रम का भविष्य में क्या आशा है।

1. The existing vocational courses have future prospects

व्यावसायिक पाठ्यक्रम का भविष्य में सम्भावना है।

☐

2. There is no future prospects for any vocational course

भविष्य में इसकी कोई सम्भावना नहीं है।

☐

3. The following courses have great future prospect

यदि उक्त पाठ्यक्रम की भविष्य में ज्यादा सम्भावना है, तो

☐

a.

b.

c.

PANDIT SUNDERLAL SHARMA CENTRAL INSTITUTE OF VOCATIONAL EDUCATION

पंडित सुन्दर लाल शर्मा केन्द्रीय व्यावसायिक शिक्षा संस्थान

131, Zone - II, M P. Nagar, Bhopal - 462 011

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II



PSSCIVE

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परियोजना शीर्षक: महाराष्ट्र के व्यावसायिक संस्थाओं में विद्यालय उद्योग संबंधों की स्थिति का अध्ययन।
(एरिक, रा.शै.अ.एवं प्र.प.(मानव संसाधन विकास मंत्रालय के अधीन एक अभिन्न इकाई) नई दिल्ली द्वारा प्रवर्तित।

1. Principal/Teacher/students/Industry : _____
प्राचार्य/शिक्षक/विद्यार्थी/ उद्योगइकाई
2. Proforma filled up by :
भरा गया प्रपत्र
 - i. Name : _____
नाम
 - ii. Designation : _____
पदनाम
 - iii. Organization : _____
संगठन

Signature

Principal Investigator: Dr.Asfa M. YasIn, Agriculture Division,
PSS Central Institute of Vocational Education, NCERT, 131,
Zone -II, M.P. Nagar, Bhopal-462011, Tel:0755-558180, 558504(o)
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प्रधान अन्वेषक : डॉ.आस्फा एम. यासीन, कृषि प्रभाग
पं.सुन्दरलाल शर्मा केन्द्रीय व्यावसायिक शिक्षा संस्थान, 131-जोन-II,
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फैक्स : 0755-558128, ई-मेल : asfayasin@hotmail.com

**INFORMATION ABOUT VOCATIONAL STUDENTS AND
STAFF FOR LAST FIVE YEARS**

व्यावसायिक विद्यार्थी और स्टाफ के बारे में पिछले ५ वर्षों की जानकारी

1. Name of the School : _____
विद्यालय का नाम
2. Name of the Principal : _____
प्राचार्य का नाम
3. Information about vocational students of different vocational the course for last 5 years व्यावसायिक विद्यार्थी का पिछले पाँच वर्षों के बारे में जानकारी

Name of the course and year पाठ्यक्रम का नाम और वर्ष	Enrollment नानांकन		Board Exam बोर्ड परीक्षा		Placement in jobs व्यावसायिक नियोजन	
	XI	XII	Appeared उपस्थित होना	Pass उत्तीर्ण	Wage नौकरी	Self स्वयं
1.(course) पाठ्यक्रम 1998-99 1997-98 1996-97 1995-96 1994-95						
2. 1998-99 1997-98 1996-97 1995-96 1994-95						
3. 1998-99 1997-98 1996-97 1995-96 1994-95						

Name of the course and year पाठ्यक्रम का नाम और वर्ष	Enrollment नामांकन		Board Exam बोर्ड परीक्षा		Placement In Jobs व्यावसायिक नियोजन	
	XI	XII	Appeared उपस्थित होना	Pass उत्तीर्ण	Wage नौकरी	Self स्वयं
4. 1998-99 1997-98 1996-97 1995-96 1994-95						
5. 1998-99 1997-98 1996-97 1995-96 1994-95						

B Information about Vocational Staff for last 5 years
व्यावसायिक स्टाफ के बारे में पिछले ५ वर्षों की जानकारी

Name of the course पाठ्यक्रम का नाम	No. of teacher शिक्षक संख्या		Instructor No. अनुदेशक की संख्या	Lab Assistants No. प्रयोगशाला सहायकों की संख्या
	Part time अंशकालीन	Full time पूर्णकालीन		
1. 1998-99 1997-98 1996-97 1995-96 1994-95				
2. 1998-99 1997-98 1996-97 1995-96 1994-95				
3. 1998-99 1997-98 1996-97 1995-96 1994-95				
4. 1998-99 1997-98 1996-97 1995-96 1994-95 .				

Name of the course पाठ्यक्रम का नाम	No. of teacher शिक्षक संख्या		Instructor No. अनुदेशक की संख्या	Lab Assistants No. प्रयोगशाला सहायको की संख्या
	Part time अंशकालीन	Full time पूर्णकालीन		
5. 1998-99 1997-98 1996-97 1995-96 1994-95				

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1. Principal/Teacher/students/Industry : _____
प्राचार्य/शिक्षक/विद्यार्थी/ उद्योगइकाई

2. Proforma filled up by :

भरा गया प्रपत्र

i. Name : _____
नाम

ii. Designation : _____
पदनाम

iii. Organization : _____
संगठन

Signature

Principal Investigator: Dr.Asfa M. Yasin, Agriculture Division,
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फैक्स : 0755-558128, ई-मेल : asfayasin@hotmail.com

TEACHER PROFILE
शिक्षक संपरेखा

1. Name of the School : _____
विद्यालय का नाम
2. Name of the teacher: _____
शिक्षक का नाम
3. Name of the Vocational course: _____
व्यावसायिक पाठ्यक्रम का नाम
4. Educational Qualification
शैक्षणिक योग्यता

	School विद्यालय	Subject विषय	Board/ Univ. बोर्ड/ वि.वि.	Division श्रेणी	Year of passing उत्तीर्ण वर्ष
Matric मैट्रिक					
+2					
Graduation स्नातक					
Post Graduation स्नात्कोत्तर					
Professional Qualification (If any) व्यावसायिक योग्यता(यदि कोई)					

5. Experience (In years)
अनुभव(वर्ष में)

- a. Starting career as
कैरियर की शुरुवात
- b. Other
अन्य
- c. As Vocational teacher
व्यावसायिक शिक्षक

6 Training प्रशिक्षण

- a. Short Term Teacher Training
Programme conducted by NCERT
एन सी ई आर टी के द्वारा अंशकालीन शिक्षक प्रशिक्षण
Yes No
हाँ नहीं
☐ ☐
- b. Year of training
प्रशिक्षण का वर्ष
- c. Any other
अन्य

7. Award/Prize पुरस्कार

	Year वर्ष	Agency एजेंसी	Nature of award पुरस्कार की प्रकृति
a			
b			
c			

8 Any other achievement अन्य उपलब्धि

- a. Publication (Name, Number of Publication)
प्रकाशन(नाम, प्रकाशन की संख्या)
- b. Member of important bodies
मुख्य सदस्य
- i)
- ii)

iii)

c. Any other
अन्य

9. The roles/duties of the vocational teacher besides teaching vocational courses
व्यावसायिक प्रशिक्षण पाठ्यक्रम में व्यावसायिक शिक्षक का कार्य का आधार

a. Planning for establishing/equipping the lab
प्रयोगशाला में उपकरणों का प्रयोजन है ☐

b. Assessing man-power requirement in the area
मानवशक्ति का आवश्यकतानुसार क्षेत्र में मापन

(i) existing vocational manpower
व्यावसायिक मानवशक्ति का अस्तित्व में होना ☐

(ii) emerging vocational manpower
व्यावसायिक मानवशक्ति का उभरना ☐

(iii) phasing out of manpower
मानवशक्ति को छोड़ देना ☐

c. Placement of the vocational students
व्यावसायिक विद्यार्थी का नियोजन करना ☐

d. Teaching non-vocational subject
अव्यावसायिक विषय का शिक्षण ☐

PANDIT H. P. S. BHAI ... U.P. ...

... 131, Zone - II, M.P. Nagar, Bhopal - 462 011

131-जोन - II, एम. पी. नगर, भोपाल - 462 011

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(एरिक, सी.एच.ए.ए. प्र.प. (मानव संसाधन विकास मंत्रालय के अधीन एक आगमन इकाई) नई दिल्ली द्वारा प्रवर्तित।)

1. Principle/Teacher/students/Industry : _____
प्राचार्य/शिक्षक/विद्यार्थी/ उद्योगइकाई

2. Proforma filled up by : _____
भरा गया प्रपत्र
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Signature

Principal Investigator Dr Asfa M Yasin, Agriculture Division,
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पं. सुन्दरलाल शर्मा केन्द्रीय व्यावसायिक शिक्षा संस्थान, 131-जोन-II,
एम.पी.नगर, भोपाल-462 011, दूरभाष: 0755-558160, 556504 (आवाज),
फैक्स : 0755-558128, ई मेल : asfayasin@hotmail.com

PROFORMA - IV

प्रारूप IV

(School-wise, Computer-wise)

(विद्यालय (वार, पाठ्यक्रम (वार)

SCHOOL INDUSTRY LINKAGES

विद्यालय उद्योग इकाई समर्थ

1. Name of the School :
विद्यालय का नाम
2. Name of the Principal/Teacher/Students :
प्राचार्य/शिक्षक/विद्यार्थी का नाम
3. Name of the vocational course
व्यावसायिक पाठ्यक्रम का नाम
4. Name of the collaborating Agency if any :
सहसम्यन्ध संस्थाओं का नाम
5. Infrastructural facilities available at school :
विद्यालय में शिक्षण सामग्री की सुविधा

Infrastructural facilities आधारित संरचना सुविधायें	Extent of availability उपलब्ध की सीमाएँ		
	Adequate सन्तुष्टि	Inadequate असन्तुष्टि	Not available उपलब्ध नहीं
a. Workshop/ Laboiatory कार्यशाला/प्रयोगशाला			
(I) Hardware हार्डवेयर	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ii) Software साफ्टवेयर	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Transaction Time कार्यसम्पादन समय	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Time for individual practice व्यक्तिगत अभ्यास का समय	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Library पुस्तकालय			
(I) Books पुस्तकें	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Infrastructural facilities आधारित संरचना सुविधायें	Extent of availability उपलब्ध की सीमायें		
	Adequate सन्तुष्टि	Inadequate असन्तुष्टि	Not available उपलब्ध नहीं
(ii) Instructional Materials अनुदेशात्मक सामग्री	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Classroom/space कक्षा/स्थान	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Teaching staff/ Demonstrators शिक्षक स्टाफ/प्रदर्शन	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Technical Staff तकनीकी स्टाफ	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Timing of training in the collaborating industry
सहसम्बन्धी उद्योग इकाई का प्रशिक्षण समय

- a. During school hours
विद्यालय समयानुसार ☐
- b. After the school hours
विद्यालय समय के बाद ☐
- c. Before school hours
विद्यालय समय के पहले ☐
- d. Any time suitable to industry
कोई भी समय जो उद्योग इकाई को सुविधा हो। ☐

3

विद्यालय से सम्बंधित उद्योग इकाई का नाम एवं प्रकार -

[illegible]

PANDIT SUNDERLAL SHARMA CENTRAL INSTITUTE OF VOCATIONAL EDUCATION

पंडित सुन्दर लाल शर्मा केन्द्रीय व्यावसायिक शिक्षा संस्थान

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1. Principal/Teacher/students/Industry :

प्राचार्य/शिक्षक/विद्यार्थी/ उद्योगइकाई

2. Proforma filled up by :

भरा गया प्रपत्र

i. Name : _____

नाम

ii. Designation : _____

पदनाम

iii. Organization : _____

संगठन

**Principal Investigator: Dr.Asfa M. Yasin, Agriculture Division,
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फैक्स : 0755-558128, ई-मेल : asfayasin@hotmail.com**

COLLABORATING AGENCY (TRAINING PLACE)
सहसम्वन्धी एजेंसी (प्रशिक्षण स्थान)

1. Name of the collaborating agency with address:

सहसम्वन्ध संस्था का नाम और पता

2. Name of the institute attached :

जुड़े हुये संस्था का नाम

3. Name of the vocational course :

व्यावसायिक पाठ्यक्रम का नाम

4. Modalities for the use of hardware-equipment/ machines

हार्डवेयर उपकरण/ मशीनों का उपयोग करने की पद्धति

1. Repair and maintenance, wear and tear of hardware

हार्डवेयर का मरम्मत और रखरखाव सहन-भरण करना

- a. Entire cost borne by the Industry

सारा मूल्य उद्योग इकाई देती है

☐

- b. A consolidated (agreed) amount given by the school

कुछ निश्चित मूल्य विद्यालय देता है

☐

- c. Cost shared by both school and Industry

विद्यालय/उद्योग इकाई दोनों मूल्य का मिलकर देना

☐

- d. Any other (please specify)

अन्य

2. Accessories for training

प्रशिक्षण में सहायक है

- a. Entire cost borne by the Industry

सम्पूर्ण व्यय उद्योग इकाई द्वारा

☐

- b. A consolidated (agreed) amount given by the school

निश्चित धनराशि विद्यालय द्वारा देना

☐

- c. Cost shared by both school and industry

विद्यालय/ उद्योग इकाई दोनों द्वारा देना

☐

- d. Any other (please specify)

अन्य (कृपया स्पष्ट कीजिए)

3. Handling of hardware/machines/equipments etc
हार्डवेयर/मशीन/ उपकरण का उपयोग

a. Under supervision
निरीक्षण के अन्दर से

☐

b. Independent use
स्वतन्त्रता उपयोग

☐

4. Handling costly/sophisticated/sensitive Instruments
उपयोगी महंगी/ नाजुक/ संवेदनशील उपकरण

a. Only demonstration
केवल प्रदर्शन

☐

b. Use under supervision
निरीक्षण के अन्दर उपयोग

☐

c. Independent use for training
प्रशिक्षण के समय स्वतन्त्रता

☐

d. Use after acquiring required skills
उपयोगी अर्जित कौशल के बाद

☐

5. Modalities for the use of Software (raw materials/gas/chemicals etc.)
साफ्टवेयर उपयोग की पद्धति(कच्चामाल/गैस/रासायनिक आदि)

1. Cost of consumable items
उपयोगी वस्तुओं का मूल्य

a. Entire cost borne by the Industry
सम्पूर्ण व्यय उद्योग इकाई द्वारा

☐

b. A consolidated (agreed) amount given by the school
निश्चित धनराशि विद्यालय द्वारा देना

☐

c. Cost shared by both school and industry
विद्यालय/उद्योग इकाई दोनों द्वारा देना

☐

d. Any other (please specify)
अन्य(कृपया स्पष्ट कीजिए)

2. In case, products are marketable, what is the mode of incentives
यदि सामग्री बाजार में विक्रय है तो प्रोत्साहन के रूप में

a. Monetary incentive to trainees
मुद्रा प्रशिक्षु को प्रोत्साहन के रूप में

☐

b. Free conveyance/working lunch/lodging to trainees
नि शुल्क यातायात/भोजन व्यवस्था/ प्रशिक्षु का आवास

☐

c. Any other (please specify) _____
 अन्य(कृपया स्पष्ट कीजिए)

6. Modalities for the use of Experts/Teachers/Trainers/Demonstration, etc.
 विशेषज्ञ/ शिक्षक/ प्रशिक्षण/ निरीक्षण आदि उपयोग के गुण

- a. Free of cost
 निःशुल्क ☐
- b. Honorarium paid by the school
 विद्यालय के द्वारा मानदेय वेतन
- (I) Monthly basis
 मासिक आधार पर ☐
- (II) Hourly basis
 घंटों के आधार पर ☐
- c. Experts visit school for teaching purpose
 विद्यालय में प्रशिक्षण उद्देश्य के लिये विशेषज्ञ का आना
- (i) Free of cost/conveyance
 निः शुल्क/ परिवहन ☐
- (ii) Honorarium paid by the school on monthly basis
 विद्यालय महीने के आधार पर मानदेय देना ☐
- (iii) Hourly basis
 घंटों के आधार पर ☐
- d. Supporting staff is available
 सहायक स्टाफ उपलब्ध है
- (i) Free of cost
 निःशुल्क ☐
- (ii) On payment basis
 वेतनमान के आधार पर ☐

7. Modality for the time schedule
 समय अनुसूची की पद्धति

- a. Training is given during working hour of the Industry
 उद्योग इकाई की कालावधि के समय प्रशिक्षण ☐
- b. Training is given after working hour of the Industry
 उद्योग इकाई की कालावधि पश्चात् प्रशिक्षण ☐
- c. Training is given both during and after working hour of the Industry
 उद्योग इकाई की कालावधि के पहले और पश्चात् दोनों समय प्रशिक्षण ☐

- d. Training is given
प्रशिक्षण देना
- (i) In a specific period (months)
विशेष समय(माह) ☐
- (ii) Spread throughout the year
पूरे वर्ष करवाना ☐

- e. Total time spent during training
प्रशिक्षण के लिए कुल समय देना
- (i) In a week : days
सप्ताह में दिन
- (ii) In a month days
माह में दिन
- (iii) In a year month/days
वर्ष में माह/ दिन

8. Modalities for the use of instructional material/ library facility :
अनुदेशात्मक सामग्री/ पुस्तकालय सुविधायें उपयोग करने की पद्धति

1. Library
पुस्तकालय

- a. Not available in the Industry
उद्योग इकाई में उपलब्ध नहीं ☐
- b. Available
उपलब्ध
- (i) Trainees are allowed to read in the library
प्रशिक्षु पुस्तकालय में पढ़ने की आज्ञा ☐
- (ii) Trainees are permitted issue books to take home
प्रशिक्षु को पुस्तकें घर ले जाने की सुविधा
- (a) by depositing caution money
कोसनमनी जमा के आधार पर ☐
- (b) without depositing caution money
बिना जमा कोसनमनी के आधार पर ☐
- (iii) Trainees are not issued books for home
प्रशिक्षु को पुस्तकें घर के लिये आज्ञा नहीं देना ☐
- (iv) Trainees have no access to library to read
प्रशिक्षु पुस्तकालय में पुस्तकें का नहीं पढ़ पाना ☐

2. Instructional Material

अनुदेशात्मक सामग्री

- a. Supplied by the industry free of cost ☐
उद्योग इकाई द्वारा निःशुल्क देना
- b. Supplied on cost basis ☐
मूल्यों के आधार पर
- c. Copies/photocopies managed by the trainees themselves ☐
कॉपी/ फोटोकॉपी प्रशिक्षु स्वयं इंतजाम करना
- d. Any other (please specify) _____
अन्य(कृपया स्पष्ट कीजिए)

9. Monitoring of School Industry Linkages

विद्यालय उद्योग संबंध पर नियंत्रण

- a. There is a monitoring committee ☐ Yes ☐ No
कोई नियंत्रण समुदाय नहीं ☐ हाँ ☐ नहीं

b. Does monitoring committee include the following members:

क्या नियंत्रण समुदाय में निम्न सम्मिलित हैं

- I. Head of School ☐
विद्यालय प्रमुख
- II. Head of collaborating Institutions ☐
सहसम्बन्धी संस्थान का प्रमुख
- III. Vocational Teacher ☐
व्यावसायिक शिक्षक
- IV. WS/Lab Supervisor ☐
कार्य निरीक्षण/प्रयोगशाला निरीक्षण
- V. Student representative ☐
विद्यार्थी प्रतिनिधित्व
- VI. Any other (please specify) _____
अन्य(कृपया स्पष्ट कीजिए)

c. The monitoring committee meets

नियंत्रण समुदाय का मिलना

- (i) Once a year ☐
वर्ष में एक बार
- (ii) Twice a year ☐
वर्ष में दो बार

(III) Only when emergency arises
केवल आवश्यकताानुसार करना

☐

d. During Training Time Lab/WS Supervisor is present

प्रयोगशाला/ कार्य निरीक्षण की उपस्थिति में प्रशिक्षण का समय

(i) throughout

लगातार

☐

(ii) often

अक्सर

☐

(iii) some days

कुछ दिन

☐

(iv) Rarely

कभी-कभी

☐

e. Vocational Teacher is present

व्यावसायिक शिक्षक उपस्थित है,

(i) throughout

लगातार

☐

(ii) often

अक्सर

☐

(iii) some days

कुछ दिन

☐

(iv) rarely

कभी-कभी

☐

10. Evaluation of skill in Training in the Industry

उद्योग इकाई में प्रशिक्षण कौशल का मूल्यांकन

a. Conducted and certified by the Industry

उद्योग इकाई के द्वारा संचालित और प्रमाणित

☐

b. Conducted but not certified by the Industry

उद्योग इकाई के द्वारा संचालित लेकिन प्रमाणित नहीं

☐

PSS CENTRAL INSTITUTE OF VOCATIONAL EDUCATION

पं. सुन्दरलाल शर्मा केन्द्रीय व्यावसायिक शिक्षा संस्थान

131 Zone-II, M.P. Nagar, Bhopal-462011

131 ज़ोन-II, एम. पी. नगर, भोपाल-462011

PROFORMA F42



PSS Form

Project Title : A CASE STUDY OF SCHOOL-INDUSTRY LINKAGES IN
VOCATIONAL INSTITUTION OF MAHARASHTRA - Sponsored by
ERIC, NCERT, (a constituent Unit of MHRD) New Delhi.

परिचालना सांख्यिक महानगर के व्यावसायिक संस्थाओं में विद्यालय उद्योग संबंधों की स्थिति का अध्ययन।
(निरिक्ष, सा.स.अ.ए. प्र.प. (मानव संसाधन विकास मंत्रालय के अधीन एक अभिन
इन्स) नई दिल्ली द्वारा प्रवर्तित।

1. Principal/Teacher/students/Industry : _____
प्राचार्य/शिक्षक/विद्यार्थी/ उद्योग/इकाई

2. Proforma filled up by :

भरा गया प्रपत्र

i. Name : _____
नाम

ii. Designation : _____
पदनाम

iii. Organization : _____
संगठन

Signature

Principal Investigator Dr.Asfa M. Yasin, Agriculture Division,
PSS Central Institute of Vocational Education, NCERT, 131,
Zone-II, M.P. Nagar, Bhopal-462011, Tel:0755-558160, 556504(o)
Fax: 0755-558128, E-mail : asfayasin@hotmail.com

प्रधान अन्वेषक : डॉ.आस्फा एन. यासीन, कृषि प्रभाग
पं.सुन्दरलाल शर्मा केन्द्रीय व्यावसायिक शिक्षा संस्थान, 131-जोन-II,
एम.पी नगर, भोपाल-462 011, दूरभाष: 0755-558160, 556504(कार्यालय),
फैक्स : 0755-558128, ई-मेल : asfayasin@hotmail.com

ADVANTAGES AND CONSTRAINTS IN SIL
सिल में लाभ और प्रतिबंध

1. Name of the School/ Industry : _____
विद्यालय/ उद्योग का नाम
2. Name of the student : _____
विद्यार्थी का नाम
3. Advantages of SIL
सिल से लाभ
 - (a) For the industry
उद्योग इकाई को
 - 1.
 - 2.
 - 3.
 - (b) For the school
विद्यालय को
 - 1.
 - 2.
 - 3.
4. Constraints of SIL
सिल से प्रतिबंध
 - (a) For the industry
उद्योग इकाई को
 - 1.
 - 2.
 - 3.

(b) For the school
विद्यालय को

1.

2

3.

5. **Suggestions for improving SIL**
सिल को प्रभावशाली बनाने के लिए सुझाव

(a) From the industry
उद्योग क्षेत्र द्वारा

2.

3.

(b) From the school
विद्यालय द्वारा

1.

2.

3.

(c) From the students
विद्यार्थियों द्वारा

1.

2

3.

Collaboration of Employment Exchange/ Placement service?

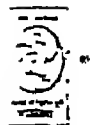
सहकारक कार्यालय आदि से सम्बन्ध/ नियोजन सेवाएँ

PANDIT SUNDERLAL SHARMA CENTRAL INSTITUTE OF VOCATIONAL EDUCATION

पंडित सुन्दर लाल शर्मा केन्द्रीय व्यावसायिक शिक्षा संस्थान

131, Zone - II, M.P. Nagar Bhopal - 462 011

131-जोन - II, एम पी नगर, भोपाल - 462 011



PROFORMA प्रपत्र

Project Title : A CASE STUDY OF SCHOOL-INDUSTRY LINKAGES IN VOCATIONAL INSTITUTION OF MAHARASHTRA, Sponsored by ERIC, NCERT, (a constituent Unit of MHRD) New Delhi

परियोजना शीर्षक: महाराष्ट्र के व्यावसायिक संस्थाओं में विद्यालय उद्योग संबंधों की स्थिति का अध्ययन।
(एरिक, रा.शे.अ. एवं प्र.प. (मानव संसाधन विकास मंत्रालय के अधीन एक जूनेट नई दिल्ली द्वारा प्रवर्तित।

1. Principal/Teacher/students/Industry : _____
प्राचार्य/शिक्षक/विद्यार्थी/ उद्योगइकाई

2. Proforma filled up by :

भरा गया प्रपत्र

i. Name : _____
नाम

ii. Designation : _____
पदनाम

iii. Organization : _____
संगठन

Signature

Principal Investigator: Dr.Asfa M. Yasin, Agriculture Division,
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एम.पी.नगर, भोपाल-462 011, दूरभाष: 0755-558160, 558504, फैक्स,
फैक्स : 0755-558128, ई-मेल : asfayasin@hotmail.com

PROFORMA - VII

प्रपत्र - VII

(Course-wise)

(नियमानुसार)

ROLE OF DIFFERENT AGENCIES IN SIL
सिल में विभिन्न एजेंसी के कार्य

INTERVIEW (साक्षात्कार)

1. Role of the following agencies in establishing SIL ?

सिल को स्थिर करने के लिये एजेंसी का कार्य?

a. Students (Community)

विद्यार्थी (समुदाय)

b. Vocational Teacher (Community)

व्यावसायिक शिक्षक (समुदाय)

c. Principal (Community)

प्राचार्य (समुदाय)

d. Head of collaborating Institution
मुख्य सहसम्यन्ध संस्थान

e. District Vocational Education Officer
जिला व्यावसायिक शिक्षा अधिकारी

f. Directorate
निर्देशालय

Suggestion for successful implementation of SIL as per opinion of
[For interview]
शिल को सफल बनाने के लिए (साक्षात्कार)

a. Students
विद्यार्थी

- b. Vocational Teacher
व्यवसायिक शिक्षक
- c. Principal
प्रधान
- d. Head of Collaborating Institution
संस्था के प्रमुख के सहसहस्य
- e. District Vocational Education Officer
जिला व्यावसायिक शिक्षा अधिकारी
- f. Directorate
निर्देशालय